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ABSTRACT

This study investigates the effects of alternate types of curriculum and counseling treatment on elementary school children categorized into six temperament-attitude clusters. Through a second-order factor analysis of a multi-trait multi-source assessment instrument (The Barclay Classroom Climate Inventory), six cluster groups of characteristics based on self-report, peer nominations and teacher judgments were identified. Utilizing three sets of pre-post longitudinal data, an analysis of covariance was completed on scale and factor scores partialing out the effects of sex, treatment and cluster group. Similar nonparametric methods were used for indicators of problem behavior. A number of significant three-way interactions was obtained. A value judgment was made concerning the growth direction (positive or negative) of means changes for these variables and groups. The results of the study suggest that temperament-aptitude clusters present a mediating effect on outcomes of educational or counseling treatments. What works well as an intervention for one group appears to block development for another group. Evidence of the replicability of the findings is presented and study limitations are discussed. (Author/CM)

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# TEMPERAMENT CLUSTERS AND INDIVIDUAL DIFFERENCES IN THE ELEMENTARY CLASSROOM

## A SUMMARY

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"When means are found to identify temperaments that thrive in the more open classroom environment and those that thrive in the more traditional ones, it will probably be discoverd that these distinctions can confer great benefits on a great many children in both of these general categories. This might be one of the great breakthroughs to meeting individual children's real needs on a more individual basis than educational innovators have been looking for."

B.Z. Friedlander, 1975

"General instructional theory, I think, is a holy grail."

R.E. Snow, 1977

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ABSTRACT

This study investigates a temperament-aptitude interaction with alternate curriculum and counseling treatment outcomes. Through a second-order factor analysis of a multi-trait multi-source assessment instrument (The Barclay Classroom Climate Inventory) clusters of characteristics relating to self-report, peer nominations and teacher judgments were identified. Utilizing 3 sets of pre-post longitudinal data, an analysis of covariance was completed on scale and factor scores partialing out the effects of sex, treatment and cluster group. Appropriate non-parametric similar methods were used for indicators of problem behavior.

A number of significant three-way interactions were obtained. A value judgment was made concerning the growth direction (positive or negative) of means changes for these variables and groups. By assigning a weight for positive changes a transformation was effected that provided a comparative index of change for each of the groups within the three-way interaction. This weight was then displayed in terms of a standardized T score distribution.

The results of the study suggest strongly that temperament-aptitude clusters present a mediating effect on outcomes of educational or counseling treatments. What works well as an intervention for one group appears to block development for another group. Evidence of the replicability of the findings is presented by comparing the outcomes of a large British study by Neville Bennett to the present study.

# Temperament Clusters and Individual Differences in the Elementary Classroom : A Summary[1]

## Introduction

The purpose of this study is to report some differences in outcome measures that appear to be related to temperament-aptitude interactions with treatments. The subject is important and timely. It is important because the concept of temperament has been known from antiquity and has never really been abandoned either by researchers or by the vast majority of people who make judgments about personality characteristics based on observational empiricism. It is timely, because there is currently support for an interaction theory of individual differences and treatment outcomes, and a recognition of the hopelessness of simplistic solutions to complex problems.

## Rationale

All science seeks to provide an adequate analog to explain natural phenomena. Man himself is no exception to this process. Thus, one of the earliest approaches to the explanation of man's behavior was related to termperament. Galen and Hippocrates both felt that temperament characteristics were related to balances between primary determinants of air, earth, fire and water. In more modern times Kreschmer, Sheldon, Eysenck, Thurstone, and many others have provided evidence supporting much of the older judgments of antiquity by modern factor analytic methods.[2]

In addition longitudinal studies by two separate sets of investigators ( Buss & Plomin: 1975, Thomas and Chess: 1977) provide still further support for the existence of activity-passivity, impulsivity-control, seclusive-social dimensions in human personality and behavior. But different from earlier speculations and observations, the more recent view regarding temperament is that the effects of hereditary endowment interact with different environments to provide an explanation of much of the consistency in human behavior. With the advance of biological science it is not inconsistent to view the templates of DNA that specify the pattern of growth and development in the human organism as being also related to components of intelligence, emotive reactivity, and susceptibility to change. It is useless to argue anymore that either heredity or environment can account for the variability of a majority of human behaviors.

The existence of such interactive modalities in man is not really doubted. The explanation of the differences is more controversial.[3] The method of assessing such differences is often obscured by psychometric and statistical manipulations. Perhaps the major problem has been the fact that measurement outcomes are mediated by a host of known variables, some of which are invariant and others moderately to extensively variant. For example, hereditary components, socioeconomic structure, sex differences and role expectations, achievement, and racial expectations all interact in a complex network that makes the unscrambling of the main effects of a given set of observations, behavioral or psychometric most difficult. It is for this reason, that studies with self-concept measures, locus of control

measures, and a host of personality and achievement measures are often inconclusive. Typically, researchers engage in "fishing expeditions" to determine what proportion of variance a given test accounts for. Unfortunately, the imbedded nature of the invariant and moderately variant characteristics of individuals is such that the true variance ascribed to a given measure is seldom obtained.[4]

Over a period of years I have worked on the development of a multi-trait, multi-source instrument for evaluating the status of individuals within an enclosed environment such as the classroom. This instrument is called the Barclay Classroom Climate Inventory. Based on the perception of functional skills in outdoor mechanical, scientific-intellectual, social-conventional and enterprising dimensions, self evaluation is compared with peer evaluations on the same dimensions. In addition, teachers rate children in terms of an array of adjectival descriptions related to typical patterns of behavior. The results of this configuration of variables can be expressed in six factor scores which in turn yield a higher-order set of six clusters. These six clusters are described in terms of two bi-polar axes: energy vs. apathy, and sociability vs. individuality. The ultimate output of the inventory then yields a temperament-aptitude typology.[5]

## Method

The existence of such temperament-aptitude clusters is relatively easy to document both by factor analysis and multiple discriminant analysis. But do these clusters show a differential

susceptibility to educational treatments ? This is the core question, for if such statistically derived groupings of characteristics have any meaning at all, it must be related to change.

Treatments

In order to explore the possibilities of this relationship, a post hoc data analysis was done. Three studies which had been analyzed previously were re-analyzed. These three studies were all longitudinal in nature, and pre-post data on the BCCI were available. The first of these studies was done in the Terre Haute Indiana Schools ( Vigo County School Corporation) from 1972-1975. The treatments were:(1) a traditional approach to learning contained within an intact school setting. Classes were organized much as traditional schools with a structured plan of curriculum objectives and the building was of traditional format and design; (2) an "open" school approach, wherein grades were grouped in larger units, teams of teachers worked with the students, and the building format was new and consistent with the "open" school format; (3) a behavioral approach wherein an entire school effort was mobilized towards the use of a behavioral technology and approach to fostering school learning and achievement. This building was also new and of an advanced design. The purpose of this effort was to determine which approach was most beneficial to children in terms of both increase in the rate of achievement as measured by the ITED, reading in terms of the Nelson-Denny Reading Tests, and affective-social development as measured by the BCCI. A number of main effects were observed and have been reported in other studies (Barclay, Covert, Stilwell & Scott,1975).

The second study was completed in Pocatello Idaho during the 1973-74 school year. This study focused on consultation as a method of fostering affective and social development in children. Basically what was entailed here was a consultation approach to specific target children. The Learning Disorders Laboratory at Idaho State University possessed a number of consultants who could work with teams of teachers and principals as well as guidance counselors in marshalling an array of people and curriculum alternatives to be utilized as a vehicle for promoting affective-social growth in certain targeted children. The writer conducted a workshop with the consultants in how to use the BCCI data output as a preventive screening device. Schools in Pocatello, American Falls and Shelley Idaho participated in this effort. When the data reports had been returned to Idaho, the writer met with local school teams and the consultants to (1) identify target pupils, (2) explore some alternative behavioral and curricular strategies, and (3) develop guidelines for an ongoing monitoring of the intervention process. Each school in conjunction with consultants identified a target behavior or problem that they wished to work on. In one case it was self-concept, in another cognitive motivation, and still another self-control skills. This effort lasted the calendar school year of 1973-74 .

The third study was completed in Zebulon Georgia by Wayne Buffington during four months of 1976-77(Buffington,1978). Buffington's study investigated the effects of two group guidance treatments in terms of the development of affective-social skills.

The first method utilized a rational-emotive therapy approach focusing on the development of assertive skills. This method is hereafter referred to as RBT. The second method was related to a series of procedures of a humanistic nature that are known as DUSO. Ten classes of fourth and fifth grade students were tested in September and January of the 1976-77 school year. Intervention procedures included the providing of some in-service training for teachers and consultation plus appropriate materials.

It should be noted that the treatments analyzed in these studies included a variety of procedures administered by different people with widely varying capabilities relative to the matching of treatments to problems. With the exception of the Pocatello study, where the writer had some contact, the treatments have to be understood in the context of the written and oral views of those who applied them. In short, the treatments were very much the product of an in vivo school environment, and are therefore not capable of clear and precise delineation as to consistency and effort. A summary of the subjects, BCCI groups (to be discussed next), time duration, and treatments is presented in table 1.

--- insert Table 1 about here ----

Data Analysis

In order to understand the data analysis of this study it is necessary to explain something further about the BCCI itself. The BCCI is machine scored and then analyzed via a complex computer program. The output consists not only of

raw scale scores and factor scores, but also of various tables that indicate the support system of the child ( judged by the frequency and quality of positive peer and teacher judgments versus negative judgments or omissions) as well as a risk index or probability of a problem in each of the following areas: self-competency, group interaction, verbal skills, self-control skills, energy-activity, vocational and career awareness, cognitive-motivation, and attitude. The problem formation was based on a recognition that certain characteristics of children are often related to a given problem area. For example, a problem in self-control is identified as a probable environmental fact if a teacher provides a number of adjectival ratings related to impulsivity and aggression, peers identify an individual with a number of aggressive or disruptive nominations, and self-report scales suggest an anomie or negative attitude towards school. In similar fashion a number of clinical judgments have been programmed into the computer diagnostics.[6] It should be further pointed out that the BCCI output is obtained in the form of a written report evaluating self, peer and teacher inputs separately, and then providing a number of diagnostic prescriptions and suggestions related directly to the teacher on the specific dimensions of support and risk.

In addition to the above diagnostics, six cluster groups are identified. These groups differ from each other in many ways and are the byproduct of a multiple discriminant analysis of factor scores. Self-report, peer and teacher inputs are covaried through the factor scores to produce six cluster groups.[7]

Briefly these cluster groups can be identified as follows: # 1., highly energetic and individualistic, # 2., highly energetic and social, #3., seclusive and passive, #4., passive-social, and # 5 -6 the upper average and lower average groups respectively. These groups and their characteristics will be detailed much more completely in the results section.

The overall paradigm for data analysis was a sex by BCCI group by treatment model. The cluster group of the original testing was used as the basis for assigning groups. An analysis of covariance was used for the evaluation of the scale and factor scores. The covariate was the pre-test of the BCCI given initially to each of the samples. For each of the studies included in this analysis there were 80 three-way ANCOVAS. Each looked at the outcomes of the main effect, the sex effect, the group effect, the treatment effect, sex times group, sex times treatment, group times treatment, and three way interactions. Five three way interactions at the .15 level or better were observed for the Terre Haute study; seven for the Zebulon study, and only 1 for the Pocatello study. There were,in addition, a number of significant two-way interactions between group and treatment. [8]

Such a mass of data becomes very difficult to interpret when one recognizes that in the Terre Haute sample there were 36 groups to look at pre-post for each of the variables in the three way interactions ( 2 sexes, 6 BCCI groups and 3 treatments). As a consequence, and because such variations in means by single variables becomes difficult to analyze meaningfully, a qualitative judgment was made relative to the nature of the outcome for each group. For example, on group disruptive nominations, an increase

on the post-mean observation could be interpreted negatively, viz., the group became more disruptive. Likewise a decrease could be valued as a positive indicator of control. For each variable that yielded a significant interaction, an arbitrary weight was given. A positive change was given the weight of 2, remaining the same was given a weight of 1. No weight was given for a negative change. In terms of factor score changes ( that were significant), a five point allocation was given for a positive change, 2 points for the same score, and no point for a negative change. By summing up a set of values for all the significant interactions observed on a qualitative dimension, it was possible to obtain a range of scores that relate to positive change direction. The mean and standard deviation of these scores was then obtained for the particular study and a transformation made to a standardized T score. This made it possible then to analyze the total effect of the significant three-way ( and also two-way interactions). These change value scores are reported with their standardized T score equivalents in tables 3-6 .

The analysis of the suspected problems posed a more difficult task. Here the question related both to the existence of a suspected problem area, and the quantitative value of that problem. (Note that problem areas are simply indicated in a table by an x, but in another table a value is assigned to the intensity of the problem as related to the diagnostic code of the individual in the BCCI system and a set of expectancy tables related to the complete categorization of children with various diagnostic codes and behaviors )(Barclay, 1977). Moreover, only certain individuals in each group might have certain problems indicated. Thus, two

procedures were used here. First of all chi square analysis was used to evaluate the significance of changes relative to the number and qualitative characteristics of suspected prob[illegible]. Secondly, for each group x treatment set of data a ratio index was computed. This ratio was obtained thus:

$$\text{Ratio Index} = \frac{\text{Sum of + Changes - Sum of Negative Changes}}{N - 1}$$

( N = number of observations)

The change index via a simple transformation (addition of 100 to cancel negative values) was then susceptible to the same standardization process as the parametric data.

In effect then, interaction treatments were looked at both as derived from ANCOVAS completed with three studies, and with pre-post changes on suspected problems. The purpose of these procedures can be said simply enough: it was to be able to evaluate the effects of group times treatment interactions and group times sex times treatment interactions in a manner that could be grasped simply. The transformations were designed simply to convert both parametric and non-parametric outcomes to a single metric system for interpretation. Table 2 summarizes the research paradigm.

--- insert Table 2 about here ---

## Results

Table 3 provides a summary review of the F values obtained from the ANCOVAS on the three groups. I have included values for significant interactions up to and including .17, chiefly on the recommendation of Cronbach and Snow (1977) that interaction effects should not be judged by conventional levels of significance. On the basis of the three-way interactions (except for Pocatello where there were no three-way interactions) each pre-post mean was inspected for each interaction and values assigned to obtain a cell score. These values are reported in table 4. Note that I am reporting only the two-way interactions (obtained by summing male and female cells) in this table and others following. I am following this protocol for two reasons:(1) in many instances differences between the sexes were not that notable, and (2) I shall cite those differences in the discussion of the results.

--- insert tables 3 & 4 about here ---

Table 5 provides similar data on the suspected problems categories summing all problem frequencies in each area (self-competency, group interaction etc.,) by BCCI group. Chi square analyses were completed on the raw data and results are indicated on the table.

---- insert table 5 about here ---

Table 6 provides data similar to table 5 except in this instance all groups were summed on a specific problem area.

--- insert table 6 about here ----

Figures 1-13 then provide graphic representations utilizing the standard scores of changes obtained from this procedures.

--- insert figures about here ---

## Evaluating the Effectiveness of Change Scores By Temperament Groups

Two clarifications should be made in considering the results of change cited in the foregoing figures. First of all, the standard scores are based on a weighted score related to qualitative judgments of directions of change. Second, these qualitative judgments were exercised only on those variables that showed a significant three-way interaction between sex, group and treatment. Thus the profile analysis expresses both quantitative and qualitative indicators of change unified within one system for metric comparisons. In order to facilitate the understanding of this interpretation, I shall first deal with the temperament groups themselves concentrating on differential effects that are common to both sexes. Where there are sex differences in effects these will be noted. In one of the studies no three-way interactions were obtained because of lack of significant three-way interactions (Pocatello).

### Group #1

This group has been characterized as task-oriented, quiet, introverted, often creative, and sometimes quite independent of peer group pressures. The most effective treatment overall was the traditional structured approach. The open classroom format was also quite effective for boys, but not so effective for girls.

The behavioral format had only a moderate amount of positive effects relative to this group. Males were somewhat more influenced by the RBT approach, but only moderately. The consultation effort showed different results. These could be interpreted quite easily in terms of the thrust of the effort. For in the Pocatello study, the focus was on children with behavioral problems, thus few of these children received any special attention i.e., group # 1 .

Very likely children in this classification have a high degree of internal motivation and control. With this may also go a higher rate of anxiety over interpersonal relationships. Thus, it is consistent with their personality characteristics that they might resist interventions which they view as contrived. This could be the case with the group counseling approaches. While they have learned to accomodate quite well to the structure of the regular classroom, the open format allows them to play a less stereotyped role and for this reason they may be helped by the lesser structure and greater emphasis on self expression.

Group #2

Children in this classification usually possess the highest degree of social power with both teachers and peers. They are also very often the highest achievers in the classroom, have high aspirations for the future and are usually considered leaders by others. An inspection of the profile for this group indicates that the three educational treatments appear to be moderately effective in an equal manner. By and large males are less effected

by the approaches and females more influenced. In terms of the RBT approach, this has negative effects on this group, but the DUSO group counseling seems to result in positive change. The consultation approach does not effect any positive change for this group. The findings are quite consistent with the characteristics of children in this classification. First of all, these children have learned to adjust to about any classroom situation. They have evinced leadership characteristics, probably from the first days in school. As individuals who have demonstrated consistently good and high achievement, and social leadership, they have also learned to appraise expectations well and accomodate to alternative educational approaches. Girls in this classification are particularly alert to the social contingencies that support their status. Relative to the group counseling approaches, being more assertive is definitely not something they need. They already know how to influence others, and they stand to lose their status by more assertive behavior. On the other hand, the use of affective-social skill development and the applying of more concern for others, as illustrated by the DUSO approach, can only help them gain more power and influence. Therefore it is consistent with their aspirations. Lastly, the consultation effort simply ignores this group. Consultation approaches focus on children who have little going for them, and therefore teacher attention and reinforcements tend to be directed away from them towards others. Though this procedure may result in somewhat lessened scores, it is of very little concern, for

the minor changes that occur in their BCCI scores are balanced by considerable increases in the scores of those children who need more help.

Group #3

Children in this group often are poor achievers and need an increase in both positive peer and teacher support. They are sometimes isolates and often have multiple problems in meeting both the achievement and social-affective expectations of the school. In examining the profile of changes for this group, it is apparent that sex differences make quite an impact here. For example, boys in this classification make excellent progress in the behavioral approach, but girls do comparatively poorly in all of the three teaching approaches. On the contrary, both RBT and DUSO seem to be quite effective with this group. Likewise, consultation procedures resulted in substantial positive changes for children in this group.

What is indicated from this analysis is a possibility that the slower male learner can benefit from a behavioral format that accents skill acquisition in a step by step process. Unfortunately, the same results were not observed for girls. Perhaps this is so because a great deal of a girl's status depends on acquisition of social skills. Thus a greater effort should be made in dealing with girls in this classification to help them in affective-social domains as well. This seems to be confirmed by the more effective results obtained in the DUSO counseling approach. The effectiveness of the consultation efforts for chil-

dren in this classification tends to justify efforts in identifying children with problems and focusing teacher attention on combined achievement and affective-social development procedures.

Group #4

Children in this classification often possess the greatest array of problems. They are also very often underachievers and consistently appear to be lowest in achievement in classroom groups. The highest percentage of behavior problems appear to be concentrated in this classification. This may be because these children often possess a striving towards leadership that is unfulfilled because of their personal irresponsibility and impulsivity. Thus, they are often viewed by peers and teachers as disruptive, impulsive and acting-out children.

An inspection of the profile of outcomes for this group is quite discouraging. None of the educational treatments worked well with this group. A slightly better set of outcomes resulted from the behavioral approach, particularly for girls. RBT as a method was ineffective with this group, but DUSO showed excellent results with boys and average results with girls. In the consultation approach, focusing as it did on behavior problems, there were very positive results with children in this classification.

Such findings are not altogether unexpected, for this group is most likely very highly externally controlled. Responsibility for personal behavior is often shifted away from self to others. The existence of many suspected problem areas, specifically in the self-control, group interaction and attitude areas, suggests a

stance towards school work and relationships in the school in which little personal responsibility is assumed. As a consequence, behavior can alternate between aggressive responses and sullen passivity. Moreover, typical efforts at gaining leadership are often frustrated.

Group #5

Children in this group tend to be energetic, task-oriented and good solid citizens of the classroom. They are often viewed as possessing some leadership qualities, and show a good level of achievement. They are generally academically motivated and perform well in task-oriented situations. They do best under the traditional structured situation. Average results are observed in the open classroom, but generally poor results are seen in the behavioral approach. In terms of the group counseling approaches they benefit best from the DUSO approach. In general, the observations pertinent to group #2 are relative to this group also. They generally have worked out good social rapport with teachers and peers and as a consequence tend to feel that the situation they know best is most conducive to their growth. This appears to be the regularly structured classroom setting. Since they are not usually the targets of consultation, little positive change is noted here.

Group #6

Children in this group tend to be the low average group in the BCCI typology. They have some friends, usually do about

average in academic tasks, and show a range of varied problems. Thus, they seem to be more capable both academically and socially than either of the other two groups in the lower portion of the BCCI grid (groups #3 and #4). No clear pattern emerges from their profile analysis. Boys and girls show different patterns. For example, girls seem to do well in the structured traditional approach and as a consequence of RBT group counseling. Boys do poorly in these approaches, with some positive change related to behavioral approaches. Consultation appears to be helpful to members of this group.

This group's rather erratic response to treatments may be due to the fact that they neither show the lowered academic achievement of groups #3 and #4, nor the variety of social-affective problems observed in group #4. Thus, they are often ignored in both efforts at remediation in learning, and as targets of added attention in teacher-oriented social-affective interventions. Where they appear to be targeted for such special attention, they make progress--as in the Pocatello situation. This finding also makes considerable sense given the characteristics of this group. Though they presumably achieve relatively well, and do their work, they are often ignored because they are obviously not among the leaders of the class, and are likewise not among the poorer achievers or more severe problem cases. Perhaps their indifferent response to alternative approaches simply reflects a need to be noticed also.

Reduction of Problem Behavior

In considering the results of the effectiveness of treatments or groups on the decrease of suspected problem categories, it is important to note that it was not possible to analyze the differential effects of treatments x groups x sex x problem areas. Since not all children show problems in even some areas, and the magnitude of these problems can vary on a range of values extending from 1 or 2 (minor) to 10-11 (intense), there were only two practical ways to analyze the results here. One method was to sum the values of all problems obtained by the specific BCCI group and look at the effects of treatments for that group on all problems. The other method was to sum all BCCI groups for each problem area considered (self-competency, group interaction, self-control, verbal skills, energy-activity, and cognitive-motivation) and look at the effect of the treatment (summing all groups) on a specific problem area.

As we discuss the results from these two analyses, it is important for the reader to recognize that effects shown on changes by groups as previously discussed, are not necessarily indicative of what changes may be expected on the decrease of suspected problems, for the bases of the comparisons are different.

The analysis of figures 5-6 is thus directed to the question: which treatment is most effective in reducing levels of problems (considering the entire array of problems) by BCCI group?

For Group #1, it would appear that DUSO, RBT, Behavioral and Traditional approaches all tended to reduce the level of problems

observed. Changes of a slightly higher magnitude are observed for Group #3, for the same treatments--with the exception being DUSO for Group #3. This fact suggests that intervention treatments were by and large more effective on the left side of the BCCI grid, or the side characterized by introversion and internality. In addition, of course, Group #3 is characterized by a history of poor achievement and a number of other interpersonal problems not related to self-control. The more observed success rate in these groups appears to be supportive both of the higher conditionability of introverts (Eysenck & Rachman, 1965) and the tendency for children with a longer record of failure and dependency to be influenced by modeling (Bandura, 1969). For both of these groups, the open environment has a very detrimental effect on problem reduction. For in the open environment, teacher support is diminished, structure is lessened, and the effects of the peer group increased.

Groups #2 and #5 show somewhat similar profiles also. First of all, consistent with the parametric changes, the leader group shows moderate changes in most of the approaches, but it should be recognized that this group has the generally lowest level of problem behavior of all the groups, and thus needs to show change the least. Similar results are observed for Group #5 and for many of the same reasons.

Group #4 shows poor results in problem reduction with the exception of the traditional structured approach. Group #6 is the only group that appeared to benefit from the open curriculum and from the RBT approach. In both instances for the latter

group these alternatives may have provided them an opportunity to move out of a stereotyped setting. In both settings, their need to be noticed could be enhanced through more assertive behavior.

Our final question then relates to <u>how effective were the treatments--summing across all BCCI groups--for reducing specific problem behaviors?</u> Here again, caution must be taken by the reader not to attempt to compare the results here with those immediately preceding this section, for now the frequency and magnitude of problem behavior for a specific problem area is being summed across groups and looked at in terms of treatment effectiveness.

<u>Self-Competency</u>

In terms of raising the level of positive self-competency and self-esteem (reducing problems in this area), both the RBT counseling approach and the open school format appeared to boost student's self-esteem and self-competency. On the contrary, the behavioral approach had very negative results. The other approaches had a moderate effect on this problem area. Thus, we might deduce that methods fostering independence, self-assertion, and freedom from structure tend to increase self-competency.

<u>Group-Interaction</u>

This problem area relates specifically to the manner in which children get along with each other in social situations. None of the approaches appeared to really boost this skill. But the

traditional format and the behavioral curriculum tended to have very negative effects on positive group interaction.

Self-Control

This problem area relates to the extent of positive self-control a child manifests in coping with frustration and anxiety. The traditional structured approach appears to facilitate the growth of self-control skills best, and the open environment appears to be most detrimental to the decrease of problems in the self-control dimension. Both the behavioral and DUSO approaches also appear to facilitate growth in this area.

Verbal Skills

This problem is often considered as reticence. It is found more often on the left side of the BCCI grid (the introverted and individualistic groups #1 and #3). The open format and the traditional approach appear to be most effective in reducing verbal skill deficits.

Energy-Activity

This problem area is characterized by the extent to which an individual has the energy, stamina, and persistence to be able to complete normal tasks in the classroom setting. One treatment appeared to make some overall improvement in this diagnostic category, i.e., the open curriculum.

Cognitive-Motivation

Cognitive motivation is characterized by a task-orientation for the completion of work, independent ability to complete work,

and a sense of responsibility for assignments. Two treatments appeared to be effective in increasing cognitive motivation: the RBT group counseling treatment and the open environment.

Summary

We may summarize the overall findings of this study as follows:

1. In terms of positive change, the traditional structured approach to classroom learning tends to foster the most positive social-affective growth in children. It is particularly effective in reducing self-control problems. It does not appear to be effective with passive-aggressive children (#4).
2. The open school format appears to be effective with children who are characterized as introverted, individualistic, and who have problems in verbal reticence or openess. It is conducive also for raising cognitive motivation. But it is particularly detrimental in the establishment of self-control procedures.
3. The behavioral approach has minimal effects relative to either the increasing of social-affiliative characteristics in children or the reduction of problem behavior. Where it appears effective is with children who have a history of poor achievement.
4. RBT is effective chiefly with children of low-average achievement who also have a history of problems either in academic or social-affiliative areas. It does, however, appear to be an effective technique overall for promoting both verbal skills and cognitive motivation.

5. Children who have a high support system(liked by peers and teachers) and who represent an energetic task-oriented approach to learning with resultant success for their efforts( #2) tend to be able to benefit from any of the approaches.
6. Children who are more introverted and individualistic (#1 & 3) are more susceptible to treatments overall than children characterized as extroverted and sociable.
7. Children who are typically underachievers, who manifest many self-control and group interaction problems, and who may be classified as passive-social or passive-aggressive (#4) do not gain appreciably from any of the treatments detailed in this study.

Further Comment

The above statements characterize the major findings of this study, but they are to be viewed more as working hypotheses than confirmed judgments. For there are some real limitations to the study itself. First of all, the nature of the treatments are ill defined. They represent face value statements of policy relative to studies done. Second, there are some methodological problems in utilizing analysis of covariance with scores that contribute to the group determination. A number of alternatives were considered. A multivariant analysis was out of the question because the scores contribute to the determination of the group. Simple analysis of variance would not tell us the pre-post differences. Regression is effective, but could hardly be an effective and pragmatic method for reporting differences to school personnel. Thus, the ANCOVA paradigm covarying the pre-test results appeared the most reasonable alternative, particularly

since only one scale or factor score was analyzed at a time, and the effects of that one scale or factor on the total array of inputs for determining the cluster group was minimal. A third problem related to the size of the sample. In some instances the cell size became very minimal (two or three individuals). This was particularly true in the three-way analyses. Cronbach and Snow (1977) suggest samples of at least 100, but in this situation the total sample for the Terre Haute analysis would have required upwards of 3600 subjects. A fourth problem related to the manner of interpreting two-way and three-way interactions. When the problems are considered, another severe problem emerges as to how to compare parametric and non-parametric results. I chose to devise a transformation in both parametric and non-parametric results that would allow for both a quantitative and qualitative comparison . This effort was designed to move towards a meta-theory of treatment variation related to temperament clusters. After the work was done, I learned subsequently of Smith and Glass's effort at evaluating the consequences of counseling treatments by a comparison of pre-post standard deviations (1977). Though I am intrigued by this approach, I am not sure that it allows for a qualitative evaluation as well as a quantitative one.

If there are the above problems existing in this study, there are also some unique characteristics which may to some extent ameliorate the deficiencies. First of all, the BCCI cluster group process is based on statistical assignment that acts as very sophisticated matching process, so that there is an equivalence between groups across samples. Second, the group

assignment process and the characteristics of the groups themselves tend to be consistent with findings from research in the locus of control area, anxiety, achievement-motivation and styles of achievement.[9] Third, by sheer chance there appeared to be another example of a replication of findings of this study which tend to strengthen the generalizability of the outcomes.

Replication is of course most important to any generalizability. Conceivably some of the findings of this study could be due to an artifact of the system itself. Such a replication occurred quite by accident with the discovery of Bennett's study of 1975 and reported in 1976 (Bennett,1976).[10] Bennett wished to look at student progress in what he termed formal and informal education. The former consisted of traditional English elementary school education, the latter was characterized more by progressive methods. He characterized teachers by their styles of teaching, assessed children pre and post on a personality inventory, sociometric ratings and behavioral observations, and tested their progress over a year by English, Mathematics and other achievement tests. Out of his study of student characteristics he derived eight clusters whose description are very similar to certain BCCI temperament groups. Since he had very similar groups derived from very similar measures, and tested progress both by achievement and personality characteristics, it was possible to equate six of my groups with six of his and rank order differences obtained both by Bennett and myself. A rho correlation was then completed between outcome ranks of my groups and the same outcome ranks of Bennett's groups. From the data presented by Bennett it was possible to rank order each of his groups on the Eysenck Junior

Personality Inventory, and to use the ranks of the normative BCCI groups on the multi-trait, multi-source factors. The results are presented in table 7

--- insert table 7 about here ---

Since achievement data were also available on the results of the Terre Haute study (Barclay, Stilwell, Covert & Scott,1975), it was possible to compare ranks in achievement for the Terre Haute study by BCCI groups (summing across all treatments). Similar data were available in Bennett's tables. In both instances reading, verbal and mathematics tests were given, and ranks by groups could be determined. The rho correlations for groups and achievement ranks across the two studies are presented in table 8

--- insert table 8 about here ---

In effect then, Bennett's results are remarkably similar to those obtained in this study. Though some of the handling of Bennett's statistics has been called into question by British researchers as well as American researchers, the effort itself was provocative and novel.

## Implications

There are many implications from the findings of this study and the confirmation in Bennett's work. For if temperament-aptitude clusters exist that can be defined statistically, and if these clusters represent a quasi psychological semi-permeable membrane that mediates treatments, then they should not be ignored in educational planning. The voices that cry for a

complete mainstreaming of children because this approach appears to be least restrictive for slow learners and mentally retarded should consider whether this approach is not restrictive to gifted and creative children for apparently certain temperament-aptitude cluster groups tend to benefit from an educational treatment that blocks the development of another group. Those who are winners tend to become better winners. Those who are losers tend to have their condition worsened. Can a unitary system of education both provide stimulation and modeling for retarded children and foster creativity in the gifted ? Can children who already exhibit field-dependent styles of behavior become field-independent in a competency-based or mastery- linked system of measuring educational outcomes? Do we really want to create a dependency on external criteria of behavior and learning ? Is it possible to be equal and excellent too (Gardner, 1961) ?

Cronbach and Snow have provided a strong argument against the notion that all one has to do is strengthen environmental conditions and provide a systematic enrichment of learning. They maintain that heredity-environmental interactions are not simply additive in nature.

> The idea that environments and heredities can be rank-ordered still confuses thought. Thus, when an heredity times environment interaction is invoked, e.g., to explain differences and similarities in twins, the layman usually thinks of a ranking of heredities and a ranking of environments, whose merits combine multiplicatively as well as additively. Interaction is thus interpreted as merely the mutual reinforcing effect of two pushes in the 'good' direction.

> This view is more wrong than right. Genetics has established a multi-variant conception of environments and of heredities and recognizes that the ecology that benefits one genotype blocks the development of another. A similar complexity is required in thinking about social environments (Cronbach & Snow, 1977,p.10 - italics mine).

The recognition of genotype-environment interaction blocking is probably the most important covert issue in education today. It poses a dilemma of truly formidable proportions. For if it is to be ignored, for reasons of either political pressure or supposed curriculum economics, then it is most likely that the status of educational research will continue with largely ungeneralizable outcomes similar to those reviewed extensively by Averch et. al. (1972). Some treatments will work with some children, but no single approach will work with all.[11] The failure to take into consideration temperament-aptitude clusters will constitute a large and continuing source of error variance.

The opposite alternative is equally formidable. For this alternative suggests a multi-temperament, multi-method approach to educational outcomes. Certainly arguments can be made for limited mainstreaming, or the setting of specific educational objectives and competencies, but within such an effort provision must be made for supplementary learning experiences with slow achievers, creative problem-solving with gifted, and the development of an internal locus of control for the impulsive acting-out. Moreover, what seems highly important is the development of a technology for classification and evaluation that is powerful enough to suggest alternative learning strategies, and capable of

evaluating both the process and content alternatives of learning. In effect, such a technology would allow for school psychologists, mental health consultants, guidance counselors and curriculum specialists to evaluate children early and provide alternative learning experiences of a prevention nature. Such an approach would have immeasurable consequences on the development of both adequate learning styles and mental health. Ultimately, we may be able to make the match of student characteristics with alternate learning and teaching styles. [12]

In conclusion, the evidence of the existence of such temperament-aptitude groups in this study appear to establish a reasonable epistemological certitude relative to their mediating educational treatments. Though one could conclude this study with the usual hortatory appeal for more research, my preference would be to state that there are some specific research hypotheses here which merit further investigation. For example: what kinds of experiences , teachers and methods can help group # 4 ? will alternative approaches to learning make a difference with group # 3 ? what kinds of teachers are most facilitating with various groups of children ? what kind of balance can be built between traditionally structured, "open" and behavioral curricula that will facilitate and not block development ? Such steps appear to be a logical extension of this research effort.

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Table 1

Summary of Subjects and Treatments

| Terre Haute | | Zebulon | Pocatello |
|---|---|---|---|
| BCCI Group | | | |
| I | 39 | 24 | 76 |
| II | 35 | 35 | 52 |
| III | 38 | 52 | 69 |
| IV | 25 | 28 | 45 |
| V | 28 | 28 | 40 |
| VI | 18 | 33 | 33 |
| Sex | | | |
| Male | 92 | 95 | 161 |
| Female | 91 | 105 | 154 |
| Grade Level | | | |
| Initial | 3rd | 4th-5th | 3rd,4th,5th |
| Final | 6th | 4th-5th | 3rd,4th,5th |
| Time | 1972-73 | 1976-77 | 1973-74 |
| Duration | three years | four months | six months |
| Treatment | | | |
| Effects of traditional, "open" and behavioral school formats | | Effects of Group Counseling Approaches | Effects of Learning Team Consultation |

Note: that group assignment was on the basis of the initial testing.

Table 2

Summary of Design Features

| Study | Subjects | Independent Variables | Dependent Variables |
|---|---|---|---|
| Terre Haute* | 183 | Traditional, "Open" and Behavioral Schools | BCCI |
| Zebulon | 200 | DUSO Humanistic vs. RBT group counseling | BCCI |
| Pocatello* | 315 | Consultation on affective and social group development | BCCI |

* In both these studies considerably more children were originally over 800 children were originally tested. In addition, achievement the Pocatello study over 750 children were initially tested but

| Data Analysis Methods | Outcomes |
|---|---|
| ANCOVA by sex, BCCI Group & Treatment<br>Chi Square Analysis of Problem Data | Transformation of significant interactions to standard score format |
| ANCOVA by sex, BCCI Group & Treatment<br>Chi Square Analysis of Problem Data | Transformation of significant interactions to standard score format |
| ANCOVA by sex, BCCI Group & Treatment<br>Chi Square Analysis of Problem Data | Transformation of significant interactions to standard score format |



tested. In the Terre Haute study

tests were administered . In

only half were posttested.

Table 3

Summary of Significant Two-Way and Three-Way F Values for the Studies

| Variable | Terre Haute | | Zebulon | | Pocatello | |
|---|---|---|---|---|---|---|
| | 2 Way | 3 Way | 2 Way | 3 Way | 2 Way | 3 Way |
| **Self-Report** | | | | | | |
| SE | ---- | 1.57(.11) | ---- | ---- | ---- | ---- |
| SOC' | 2.27(.01) | ---- | ---- | ---- | ---- | ---- |
| CONV | ---- | 1.83(.05) | ---- | ---- | ---- | ---- |
| REAL | ---- | ---- | ---- | ---- | 1.66 (.13) | ---- |
| INT | ---- | ---- | 3.86(.003) | ---- | ---- | ---- |
| ENT | 1.76(.07) | ---- | 1.63(.15) | ---- | ---- | ---- |
| CNT | ---- | ---- | 3.29(.007) | ---- | ---- | ---- |
| ST | 2.26(.01) | ---- | 3.34(.007) | ---- | ---- | ---- |
| VTOT | 2.15(.02) | 1.80(.05) | 1.78(.11) | ---- | ---- | ---- |
| SSR | ---- | ---- | ---- | 2.28(.04) | ---- | ---- |
| ESR | ---- | ---- | 1.96(.08) | ---- | ---- | ---- |
| PRM | ---- | ---- | ---- | 1.61(.15) | ---- | ---- |
| PRF | ---- | ---- | 1.84(.10) | ---- | ---- | ---- |
| CCI | ---- | ---- | ---- | 1.87(.10) | ---- | ---- |
| **Group** | | | | | | |
| GSC | ---- | ---- | ---- | 1.82 (.10) | ---- | ---- |
| **Teacher** | | | | | | |
| SAN | ---- | ---- | ---- | ---- | 2.38(.03) | ---- |
| PHL | ---- | ---- | ---- | ---- | 4.29(.001) | ---- |
| CHL | ---- | ---- | ---- | ---- | 4.28(.001) | ---- |
| MEL | ---- | ---- | ---- | ---- | 1.75(.11) | ---- |
| **Factor Scores** | | | | | | |
| III(Introversion) | ---- | 1.75 (.07) | 2.13(.06) | 1.56(.17) | ---- | ---- |
| V (Sociability) | ---- | 1.77 (.06) | ---- | 1.78(.11) | ---- | ---- |
| VI(Enterprising) | ---- | ---- | ---- | ---- | 1.77(.11) | ---- |

Note: self-report scores refer to various self-competencies, vocational interests and reinforcers. Group refers to peer nominations in the social-conventional area, and teacher ratings refer to teacher scales with SAN and PHL being positive ratings, and CHL and MEL negative ones.

Table 4

Two-Way Interactions

Parametric Data

| Treatment | Group I | | | Group II | | | Group III | | | Group IV | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | N | Raw M | T Score | N | Raw M | T Score | N | Raw M | T Score | N | Raw M | T Score |
| Terre Haute | | | | | | | | | | | | |
| Trad. | 14 | 26 | 67.58 | 15 | 21 | 59.63 | 8 | 9 | 40.56 | 15 | 5 | 34.20 |
| Open | 17 | 23 | 62.81 | 13 | 19 | 56.54 | 16 | 10 | 42.15 | 7 | 9 | 40.56 |
| Behav. | 8 | 15 | 50.09 | 7 | 19 | 56.54 | 14 | 16 | 51.68 | 3 | 15 | 50.09 |
| N Gps 18 Mean 14.94 | | | | | | | | | | | | |
| S.D. 6.29 | | | | | | | | | | | | |
| Zebulon | | | | | | | | | | | | |
| RBT | 12 | 8 | 37.72 | 18 | 13 | 47.30 | 32 | 17 | 54.96 | 12 | 11 | 43.47 |
| DUSO | 12 | 2 | 26.23 | 17 | 20 | 60.11 | 20 | 20 | 60.71 | 16 | 18 | 56.88 |
| N Gps 12 Mean 14.41 | | | | | | | | | | | | |
| S.D. 5.22 | | | | | | | | | | | | |
| Pocatello Consult. | 76 | 7 | 48.47 | 52 | 5 | 42.31 | 69 | 9 | 54.61 | 45 | 11 | 61.76 |
| N Gps 6 Mean 7.50 | | | | | | | | | | | | |
| S.D. 3.25 | | | | | | | | | | | | |

| Group V | | | Group VI | | | TOT. |
|---|---|---|---|---|---|---|
| N | Raw $\bar{M}$ | T Score | N | Raw $\bar{M}$ | T Score | |
| 13 | 26 | 67.58 | 8 | 13 | 46.92 | 73 |
| 8 | 16 | 51.68 | 7 | 5 | 34.20 | 68 |
| 7 | 10 | 42.15 | 3 | 12 | 45.33 | 42 |
| 12 | 14 | 49.21 | 10 | 16 | 53.05 | 96 |
| 16 | 20 | 60.71 | 23 | 14 | 49.21 | 104 |
| 40 | 2 | 23.03 | 33 | 11 | 61.76 | 315 |

Table 5

Two-Way Interactions (Treatments X Groups)

Summing All Problem Changes for Each BCCI Group

| Treatment | Group I | | Group II | | Group III | | Group IV | |
|---|---|---|---|---|---|---|---|---|
| | C.I. | S.S. | C.I. | S.S. | C.I. | S.S. | C.I. | S.S. |
| Terre Haute | | | | | | | | |
| Trad. | 100 | 48.74 | $120^{+}$ | 55.79 | $140^{+}$ | 62.80 | $120^{+}$ | 55.79 |
| Open | 100 | 48.74 | 100 | 48.74 | $40^{-}$ | 27.76 | 100 | 48.74 |
| Behav. | 120 | 55.79 | 100 | 48.74 | $140^{+}$ | 62.80 | 100 | 48.74 |
| Zebulon | | | | | | | | |
| RBT | 118 | 55.09 | $93^{-}$ | 46.33 | $146^{+}$ | 64.90 | $93^{-}$ | 46.33 |
| DUSO | $138^{+}$ | 62.10 | $138^{+}$ | 62.10 | $93^{-}$ | 46.33 | $86^{-}$ | 44.03 |
| Pocatello | 102 | 49.48 | 101 | 49.13 | 103 | 49.84 | 101 | 49.13 |

NOTE: Change index was obtained by the following formula: $\frac{\Sigma \text{positive}}{}$

The higher the change index the more positive changes observed.

Chi Square Analysis $X^2 = 255.16$ P - .001 (df = 25)

+ after change index signifies greater change than expected

- after change index signifies lesser change than expected

M = 103.47
S.D. = 28.55
N = 36 groups

| Group V | | Group VI | |
|---|---|---|---|
| C.I. | S.S. | C.I. | S.S. |
| $120^{+}$ | 55.79 | $05^{-}$ | 15.64 |
| 80 | 41.92 | $120^{+}$ | 55.79 |
| 100 | 48.74 | $60^{-}$ | 34.92 |
| 100 | 48.74 | $161^{+}$ | 70.30 |
| 107 | 51.38 | $79^{-}$ | 41.57 |
| 96 | 47.53 | $105^{+}$ | 50.68 |

$$\left(\frac{\text{change} - \Sigma \text{ negative change}}{N - 1}\right) + 100$$

Table 6

Two-Way Interactions (Treatments X Problems)

Summing All Groups for Changes

| Treatment | Self-Comp. | | Gp. Inter. | | Self-Cont. | | Verbal | |
|---|---|---|---|---|---|---|---|---|
| | C.I. | S.S. | C.I. | S.S. | C.I. | S.S. | C.I. | S.S. |
| Terre Haute | | | | | | | | |
| Trad. | 100 | 48.97 | 40$^{-}$ | 28.66 | 180$^{+}$ | 76.04 | 120 | 55.73 |
| Open | 120 | 55.73 | 100$^{+}$ | 48.97 | 20$^{-}$ | 21.89 | 140$^{+}$ | 62.50 |
| Behav. | 80$^{-}$ | 42.20 | 60$^{-}$ | 35.43 | 120 | 55.73 | 160$^{+}$ | 30.73 |
| Zebulon | | | | | | | | |
| RBT | 127 | 58.10 | 100 | 48.97 | 100 | 48.97 | 109$^{-}$ | 52.01 |
| DUSO | 100 | 48.97 | 109$^{+}$ | 52.01 | 118 | 55.06 | 100 | 48.97 |
| Pocatello | 106 | 51.00 | 106 | 45.92 | 100 | 48.97 | 96$^{-}$ | 47.61 |

NOTE: Change index was obtained by the following formula: $\left(\frac{\Sigma \text{positive}}{}\right.$

The higher the change index the more positive changes observed.

Chi Square Analysis $X^2 = 255.81$ $P = .001$ (df = 25)

+ after change index signifies greater change than expected

- after change index signifies lesser change than expected

M = 103.05
S.D. = 29.54
N = 36

| Energy | | Cog.Motiv. | |
|---|---|---|---|
| C.I. | S.S. | C.I. | S.S. |
| $60^{-}$ | 35.43 | 100 | 48.97 |
| $120^{+}$ | 55.73 | 120 | 55.73 |
| 100 | 48.97 | 100 | 48.97 |
| $82^{-}$ | 42.88 | $145^{+}$ | 64.20 |
| 100 | 48.97 | $73^{-}$ | 39.83 |
| 107 | 51.34 | 107 | 51.34 |

$$\left(\frac{\text{change} - \Sigma\text{negative change}}{N - 1}\right) + 100$$

Table 7

Rho Correlations Between Ranks of BCCI Groups and Ranks of Equivalent Bennett Groups on Personality

| BCCI Factors | Eysenck Junior Personality Inventory | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Extro-version | Neuro-ticism | Content-iousness | Self Eval. | Anxiety | Moti-vation | Asocia-bility | Conform-ity |
| I Ach. Mot. | .83 | -.37 | -.37 | .88 | .12 | .83 | -.60 | .26 |
| II Impul-sivity | .08 | -.08 | .03 | .60 | -.42 | .08 | .20 | -.28 |
| III Intro-version | -.22 | .54 | .20 | -.73 | .74 | -.26 | -.73 | -.26 |
| IV Energy | 1.00 | -1.00 | -.60 | .83 | -.46 | .54 | -.53 | .14 |
| V Socia-bility | .87 | -.93 | -.93 | .83 | -.13 | .89 | -.86 | .43 |
| VI Enter-prising | .47 | -.93 | -.33 | .47 | -1.00 | -.13 | .00 | -.13 |

N total BCCI subjects ranked = 5070
N total Bennett subjects ranked = 801

P at .01 = .83
.05 = .71

Table 8

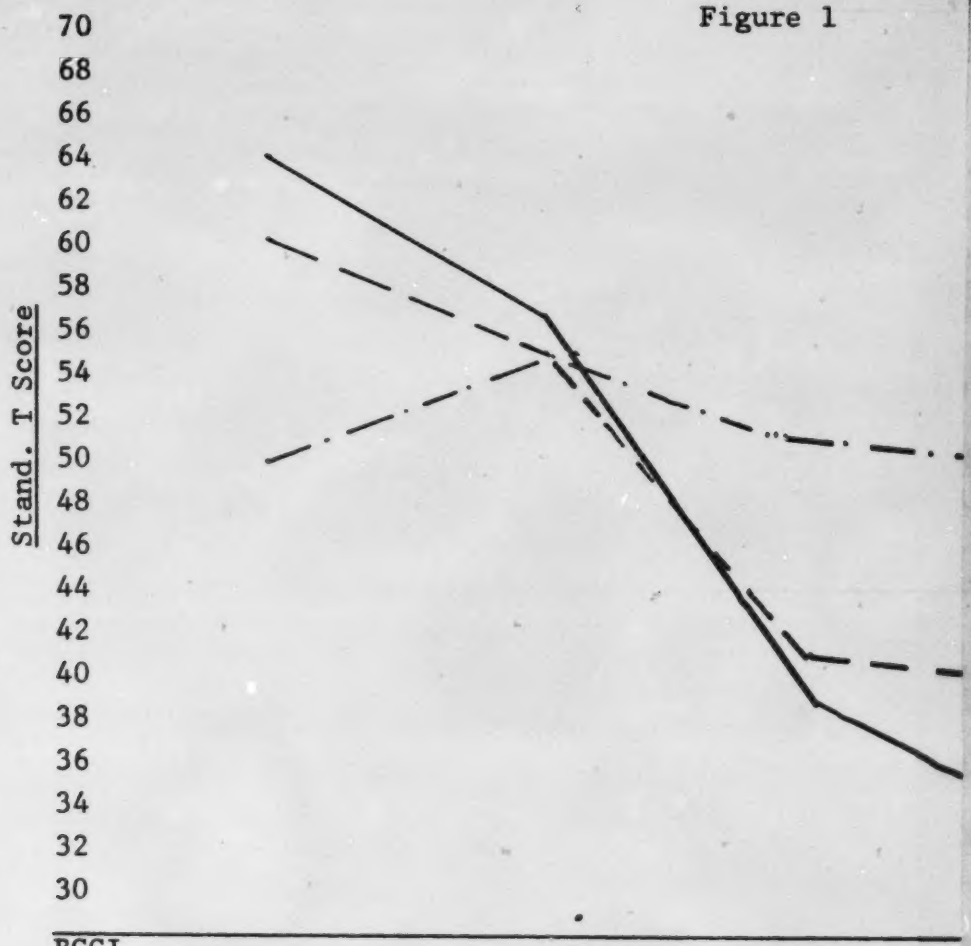
Rho Correlations Between Ranks of BCCI Groups and Ranks of Equivalent Bennett Groups on Achievement Gain

| BCCI Testing | Bennett Testing | | |
|---|---|---|---|
| | Edinburg Reading Test | English Progress Test | Mathematics Attainment Test |
| Nelson Reading Test | .47 | .83 | -.20 |
| ITBS Verbal Test | .83 | .95 | -.13 |
| ITBS Math. Test | .40 | .72 | .27 |

N = 183 subjects Terre Haute, and 801 subjects Bennett.

P at .01 = .83, and at .05 = .71.

Figure 1



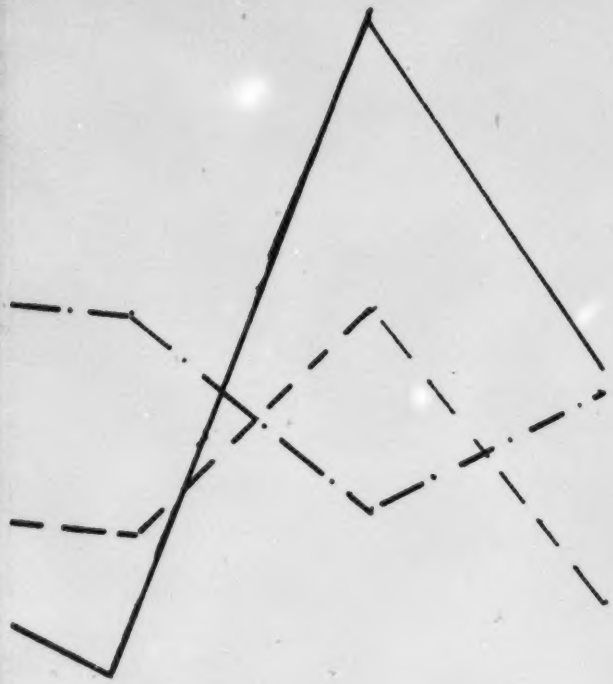

| BCCI Groups | I | | II | | III | |
|---|---|---|---|---|---|---|
| | N | Mean | N | Mean | N | Mean |
| Trad. | 14 | 67.57 | 15 | 59.63 | 8 | 40.56 |
| Open | 17 | 62.81 | 13 | 56.54 | 16 | 42.15 |
| Behav. | 3 | 50.09 | 7 | 56.54 | 14 | 51.68 |

Trad. ———

Open - - - - -

Behav. -·-·-

Effectiveness of Treatments
For Curriculum Alternatives
Terre Haute



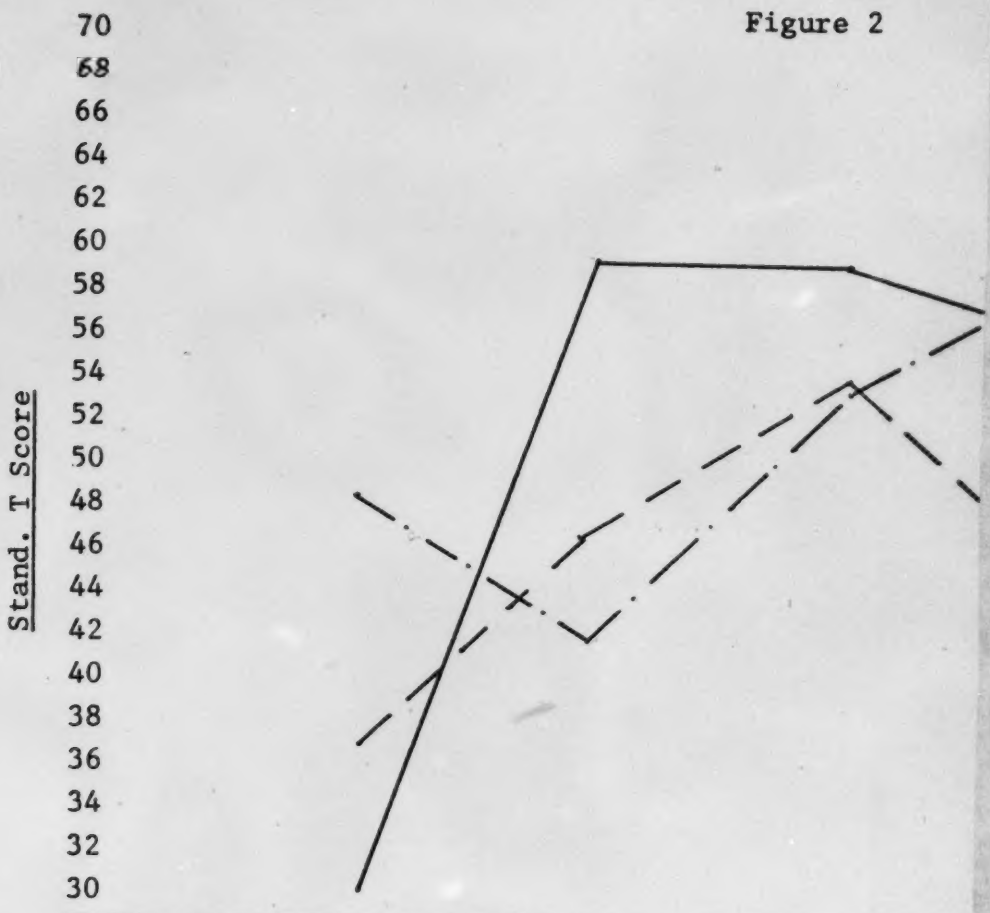


| IV | | V | | VI | |
|---|---|---|---|---|---|
| N | Mean | N | Mean | N | Mean |
| 15 | 34.20 | 13 | 67.58 | 8 | 46.92 |
| 7 | 40.56 | 8 | 51.68 | 7 | 34.20 |
| 3 | 50.09 | 7 | 42.15 | 3 | 45.33 |

Grand Mean of All Groups = 50.00

S.D. = 10.00

Figure 2



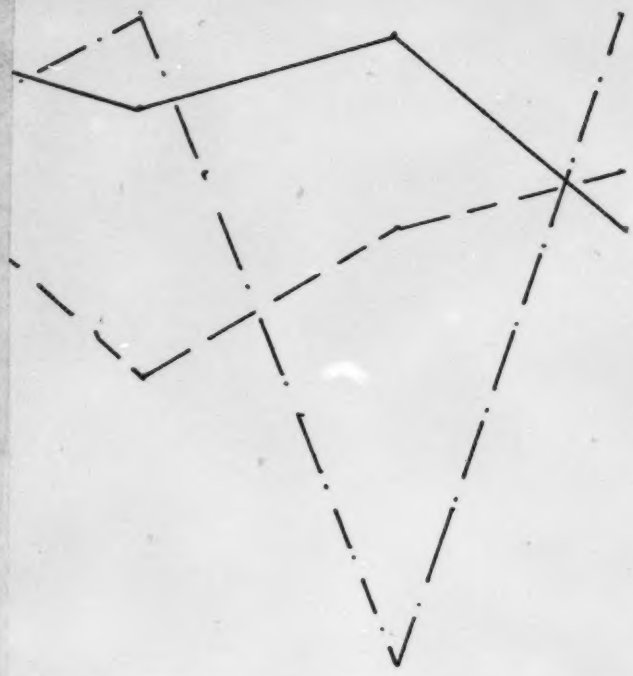

| BCCI Groups | I | | II | | III | |
|---|---|---|---|---|---|---|
| | N | Mean | N | Mean | N | Mean |
| DUSO | 12 | 26.23 | 17 | 60.11 | 20 | 60.71 |
| RBT | 12 | 37.72 | 18 | 47.30 | 32 | 54.96 |
| Consult. | 76 | 48.47 | 52 | 42.31 | 69 | 54.61 |

DUSO ———

RBT ------

Consult. -·-·-·

Effectiveness of Counseling Procedures
DUSO, RBT & Consultation
(Pocatello)

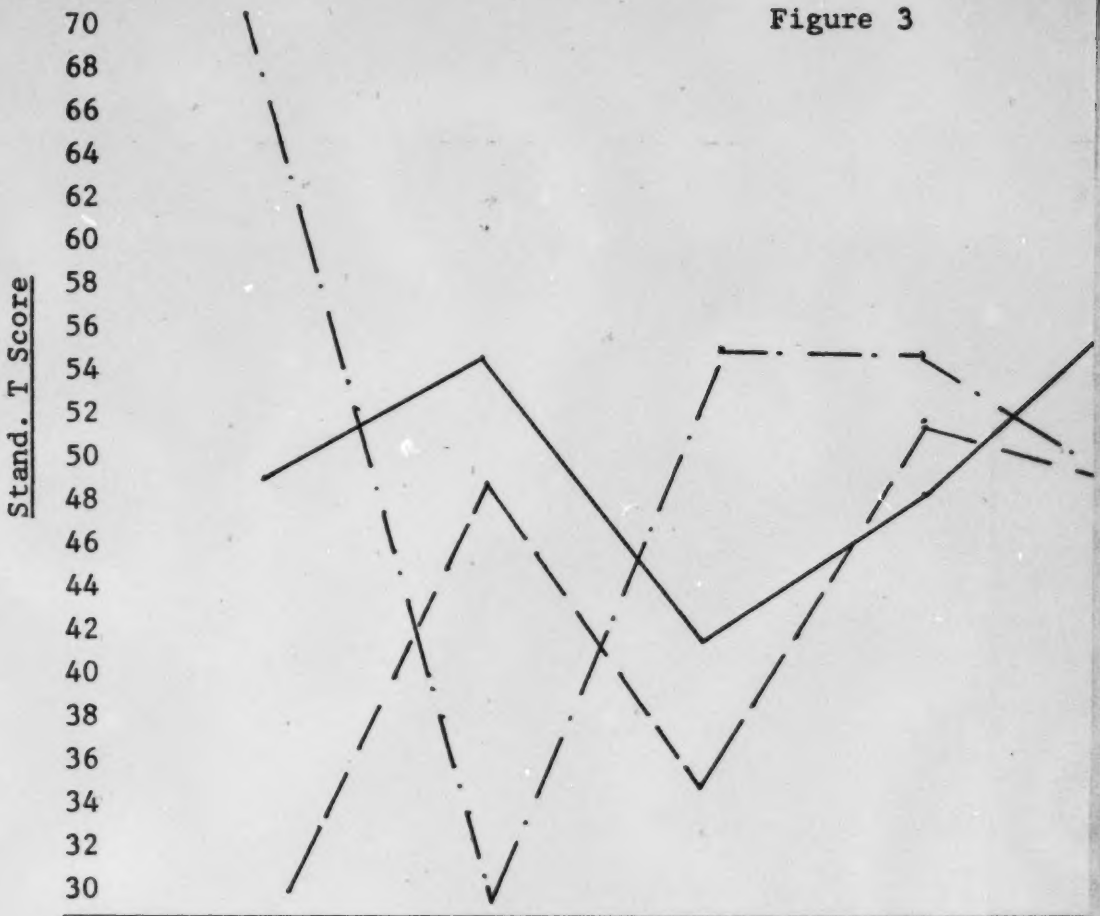




| IV | | V | | VI | |
|---|---|---|---|---|---|
| N | Mean | N | Mean | N | Mean |
| 16 | 56.88 | 16 | 60.71 | 23 | 49.21 |
| 12 | 43.47 | 12 | 49.21 | 10 | 53.05 |
| 45 | 61.76 | 40 | 23.08 | 33 | 61.76 |

Grand Mean of All Groups = 50.00
S.D. = 10.00

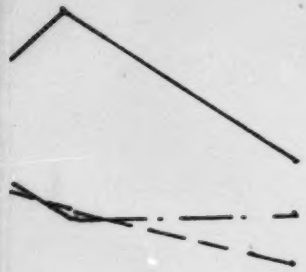
Figure 3




| Treatments | Trad. Curric. | | Open Curric. | | Behav. Curric. | | DUSO Counsel. | |
|---|---|---|---|---|---|---|---|---|
| | N | Mean | N | Mean | N | Mean | N | Mean |
| Self Concept | 73 | 48.97 | 68 | 55.73 | 42 | 42.20 | 101 | 48.97 |
| Group | 73 | 28.66 | 68 | 48.97 | 42 | 35.43 | 101 | 52.01 |
| Self Control | 73 | 76.04 | 68 | 21.89 | 42 | 55.73 | 101 | 55.06 |

Self Concept ———
Group - - - - - -
Self Control -·-·-·

Effectiveness of Treatments
(Summing Groups)
On Increasing Self-Concept,
Group Interaction & Self-Control

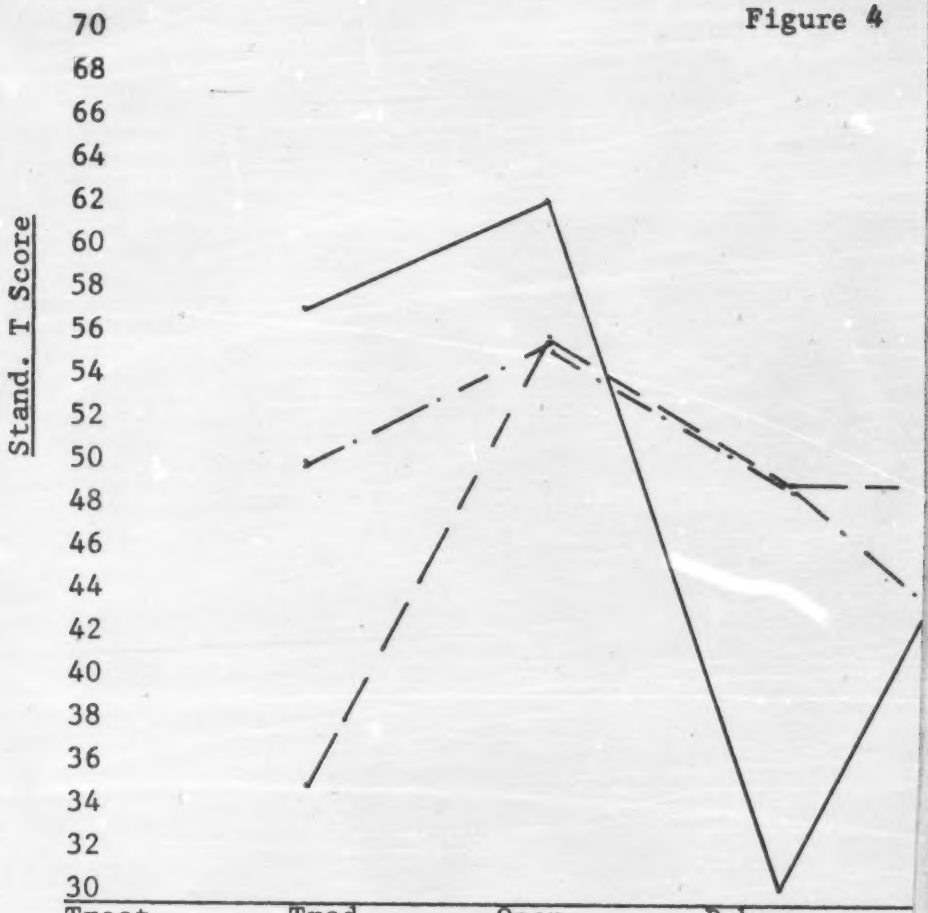


-44-

| RBT Counsel. | | Consult. Pocatello | |
|---|---|---|---|
| N | Mean | N | Mean |
| 96 | 58.10 | 315 | 51.00 |
| 96 | 48.97 | 315 | 45.92 |
| 96 | 48.87 | 315 | 48.97 |

Grand Mean of All Groups = 5 .00
S.D. = 10.00

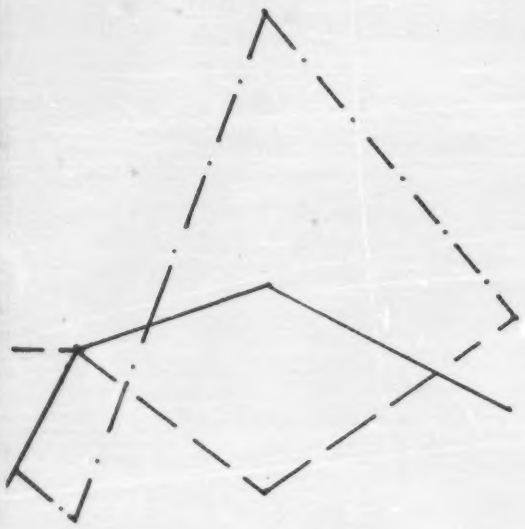
Figure 4




| Treatments | Trad. Curric. | | Open Curric. | | Behav. Curric. | |
|---|---|---|---|---|---|---|
| | N | Mean | N | Mean | N | Mean |
| Verbal Skills | 73 | 55.73 | 68 | 62.50 | 42 | 30.73 |
| Energy Effort | 73 | 35.43 | 68 | 55.73 | 42 | 48.97 |
| Cog.Mot. | 73 | 48.97 | 68 | 55.73 | 42 | 48.97 |

Verbal Skills ———
Energy Effort ------
Cog.Motiv. -.-.-.

Effectiveness of Treatments
(Summing Groups)
On Increasing Verbal Skills,
Energy Effort & Cognitive Motivation

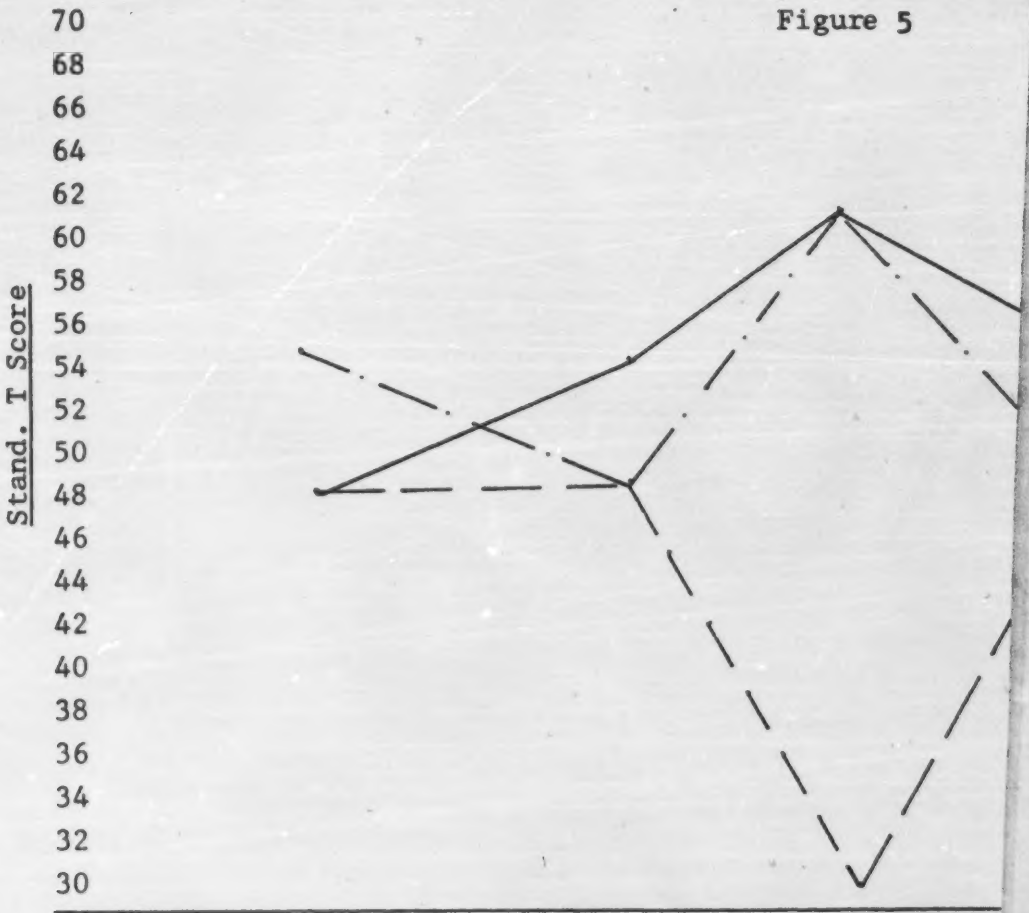




| DUSO Counsel. | | RBT Counsel. | | Consult. Pocatello | |
|---|---|---|---|---|---|
| N | Mean | N | Mean | N | Mean |
| 101 | 48.97 | 96 | 52.01 | 315 | 47.61 |
| 101 | 48.97 | 96 | 42.88 | 315 | 51.34 |
| 101 | 39.83 | 96 | 64.20 | 315 | 51.34 |

Grand Mean of All Groups = 50.00
S.D. = 10.00

Figure 5




| BCCI Groups | I | | II | | III | |
|---|---|---|---|---|---|---|
| | N | Mean | N | Mean | N | Mean |
| Trad. | 14 | 48.74 | 15 | 55.79 | 8 | 62.80 |
| Open | 17 | 48.74 | 13 | 48.74 | 16 | 27.76 |
| Behav. | 8 | 55.79 | 7 | 48.74 | 14 | 62.80 |

Trad. ———

Open ------

Behav. -·-·-·

Effectiveness of Treatments
(Summing Across Problem Areas) By Group
For Traditional, Behavioral
And Open Curricula

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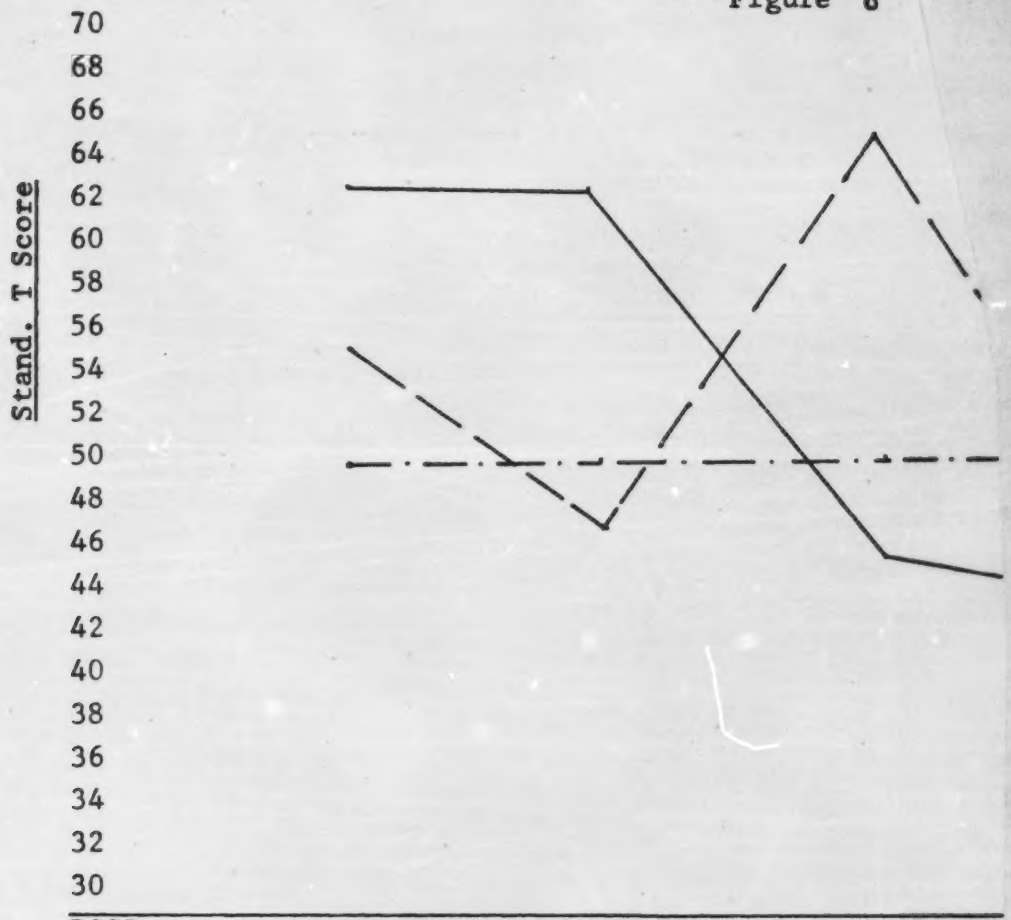
| IV | | V | | VI | |
|---|---|---|---|---|---|
| N | Mean | N | Mean | N | Mean |
| 15 | 55.79 | 13 | 55.79 | 8 | 15.64 |
| 7 | 48.74 | 8 | 41.92 | 7 | 55.79 |
| 3 | 48.74 | 7 | 48.74 | 3 | 34.92 |

Grand Mean of All Groups = 50.00
S.D. = 10.00

Figure 6



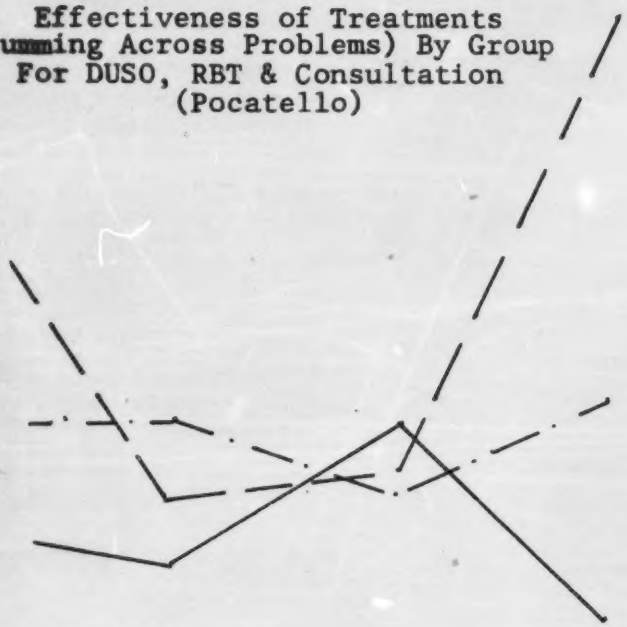

| BCCI Groups | I | | II | | III | |
|---|---|---|---|---|---|---|
| | N | Mean | N | Mean | N | Mean |
| DUSO | 12 | 62.10 | 17 | 62.10 | 20 | 46.33 |
| RBT | 12 | 55.09 | 18 | 46.33 | 32 | 64.90 |
| Consult. | 76 | 49.45 | 52 | 49.13 | 69 | 49.84 |

DUSO ————

RBT --------

Consult. -·-·-·-

Effectiveness of Treatments
(Summing Across Problems) By Group
For DUSO, RBT & Consultation
(Pocatello)

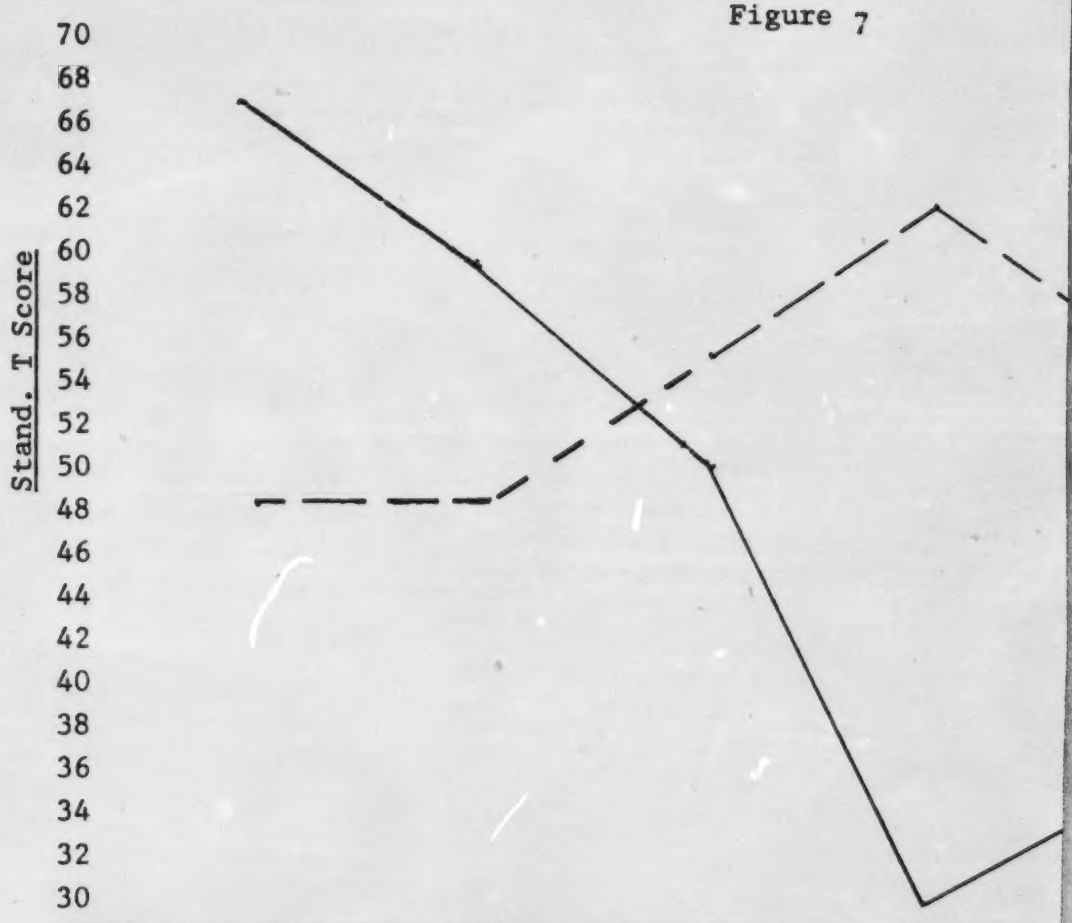




| IV | | V | | VI | |
|---|---|---|---|---|---|
| N | Mean | N | Mean | N | Mean |
| 16 | 44.03 | 16 | 51.38 | 23 | 41.57 |
| 12 | 46.33 | 12 | 48.74 | 10 | 70.30 |
| 45 | 49.13 | 40 | 47.53 | 33 | 50.68 |

Grand Mean of All Groups = 50.00
S.D. = 10.00

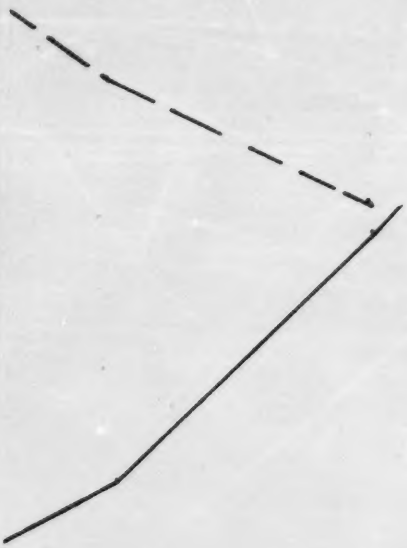
Figure 7




| Treatments | Trad. Curric. | Open Curric. | Behav. Curric. | DUSO Counsel. |
|---|---|---|---|---|
| ANCOVAS | 67.58 | 62.81 | 50.09 | 26.23 |
| Problems | 48.74 | 48.74 | 55.79 | 62.10 |
| N | 14 | 17 | 8 | 12 |

ANCOVA ———
Problems------

**Effectiveness of Treatments**
**For Group #1**



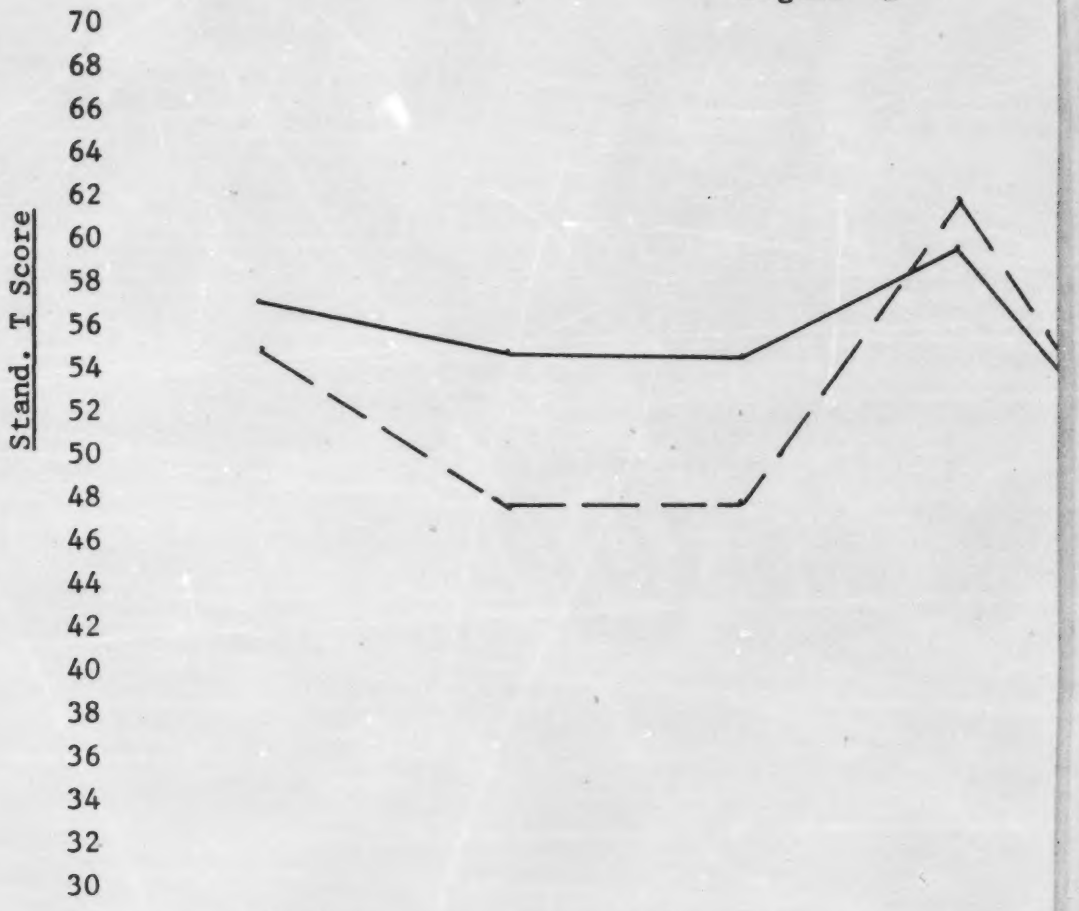


| RBT Counsel. | Consult. Pocatello |
|---|---|
| 37.72 | 48.47 |
| 55.09 | 49.48 |
| 12 | 76 |

Grand Mean of All Groups = 50.00

S.D. = 10.00

Figure 8

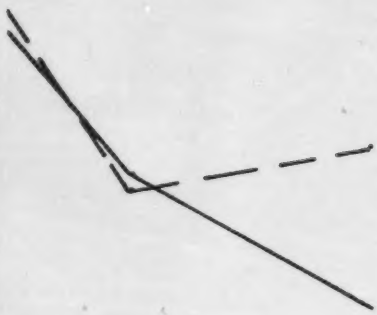



| Treat-ments | Trad. Curric. | Open Curric. | Behav. Curric. | DUSO Counsel. |
|---|---|---|---|---|
| ANCOVAS | 59.63 | 56.54 | 56.54 | 60.11 |
| Problems | 55.79 | 48.74 | 48.74 | 62.10 |
| N | 15 | 13 | 7 | 18 |

ANCOVA ———

Problems ------

**Effectiveness of Treatments**
**For Group #2**

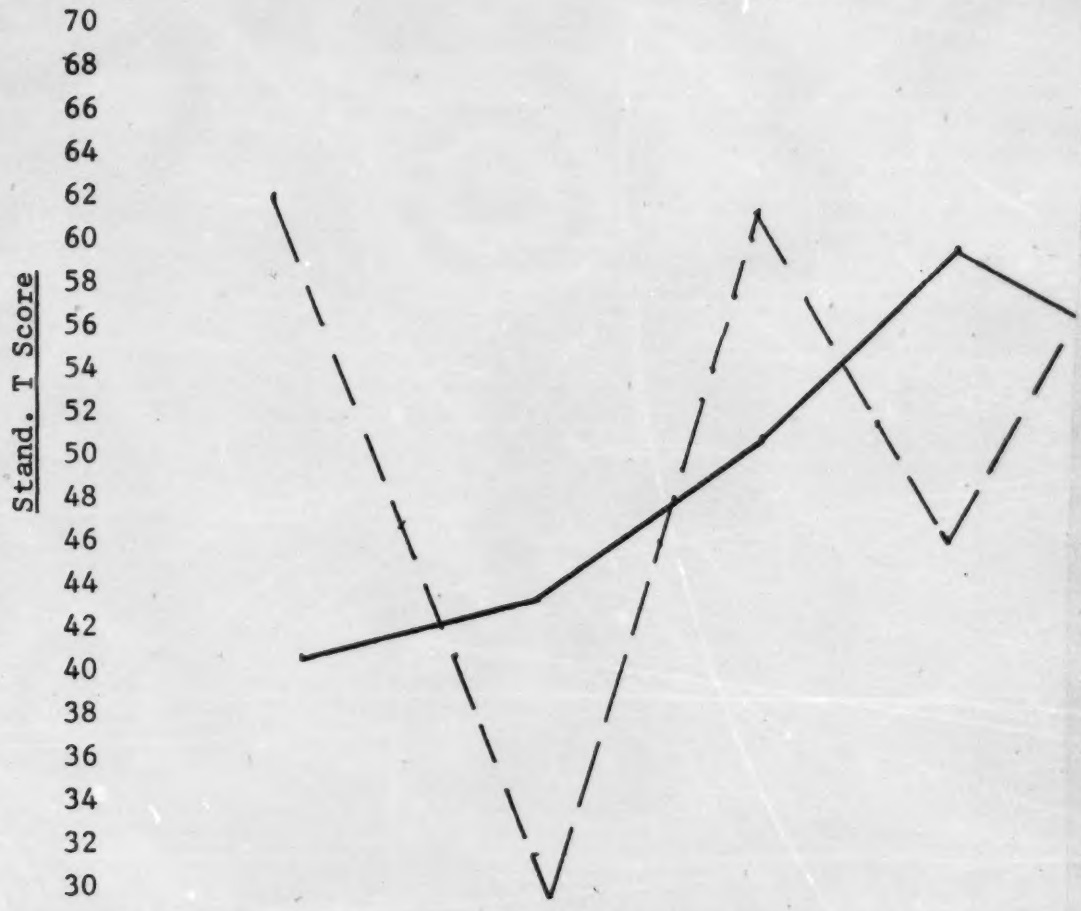




| RBT Counsel. | Consult. Pocatello |
|---|---|
| 47.30 | 42.31 |
| 46.33 | 49.13 |
| 17 | 52 |

Grand Mean of All Groups = 50.00
S.D. = 10.00

Figure 9




| Treatments | Trad. Curric. | Open Curric. | Behav. Curric. | DUSO Counsel. |
|---|---|---|---|---|
| ANCOVAS | 40.56 | 42.15 | 51.68 | 60.71 |
| Problems | 62.80 | 27.76 | 62.80 | 46.33 |
| N | 8 | 16 | 14 | 20 |

ANCOVA ———

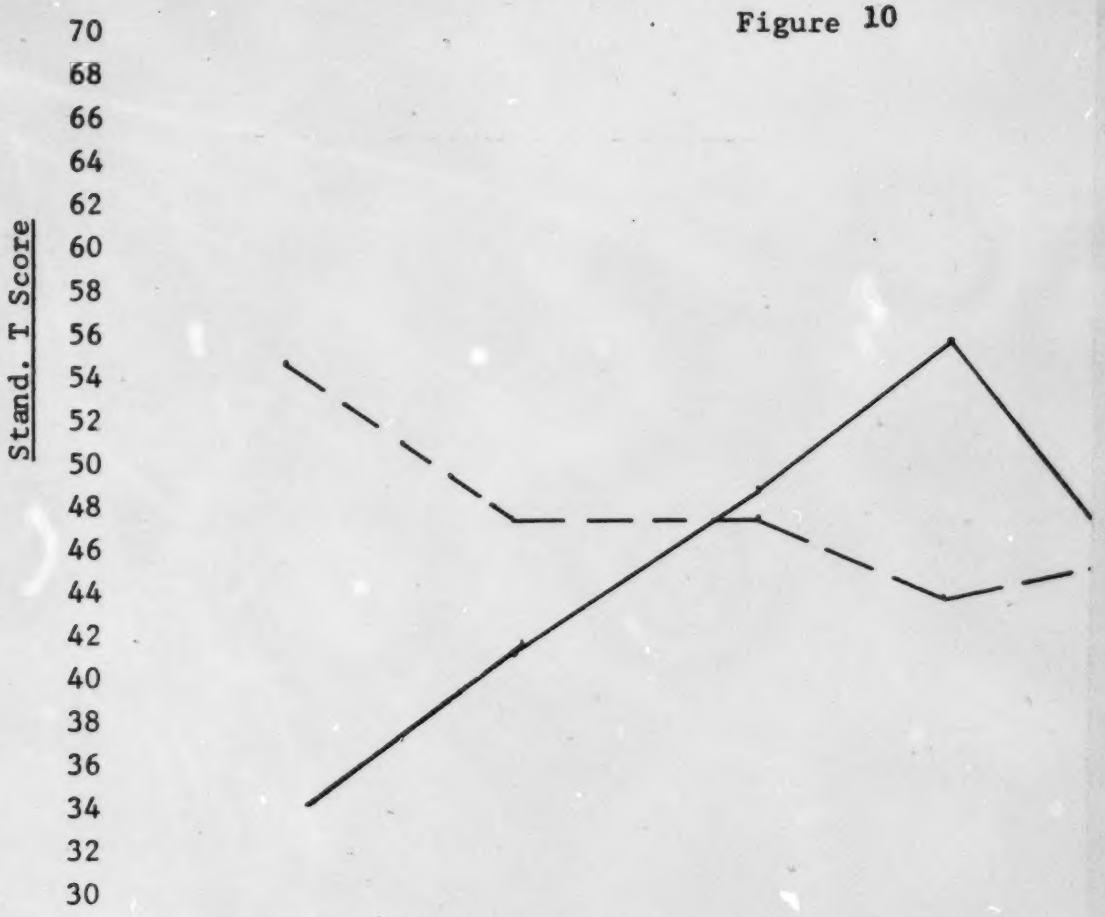
Problems ------

Effectiveness of Treatments
For Group #3

| RBT Counsel. | Consult. Pocatello |
|---|---|
| 54.96 | 54.61 |
| 64.90 | 49.84 |
| 32 | 69 |

Grand Mean of All Groups = 50.00
S.D. = 10.00

Figure 10

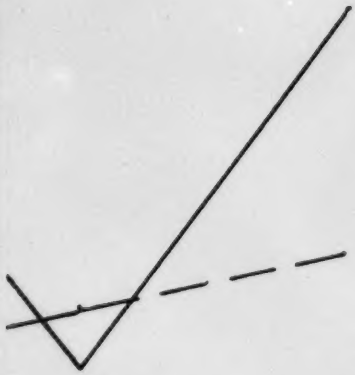



| Treat-ments | Trad. Curric. | Open Curric. | Behav. Curric. | DUSO Counsel. |
|---|---|---|---|---|
| ANCOVAS | 34.20 | 40.50 | 50.09 | 56.88 |
| Problems | 55.79 | 48.74 | 48.74 | 44.03 |
| N | 15 | 7 | 3 | 16 |

ANCOVA ———

Problems ------

Effectiveness of Treatments
For Group #4

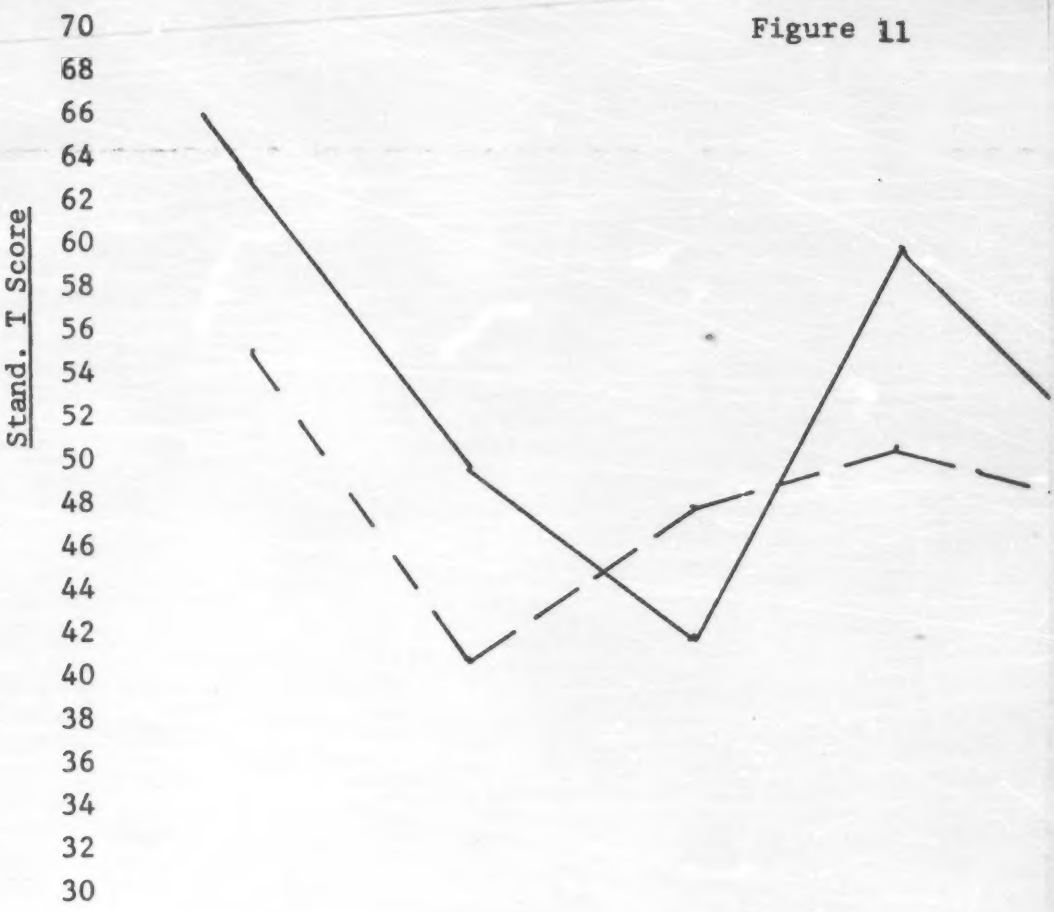




| RBT Counsel. | Consult. Pocatello |
|---|---|
| 43.47 | 61.76 |
| 46.83 | 49.13 |
| 12 | 45 |

Grand Mean of All Groups = 50.00
S.D. = 10.00

Figure 11




| Treatments | Trad. Curric. | Open Curric. | Behav. Curric. | DUSO Counsel. |
|---|---|---|---|---|
| ANCOVAS | 67.58 | 51.68 | 42.15 | 60.71 |
| Problems | 55.79 | 41.92 | 48.74 | 51.38 |
| N | 13 | 8 | 7 | 12 |

ANCOVA ———

Problems ------

## Effectiveness of Treatments For Group #5

| RBT Counsel. | Consult. Pocatello |
|---|---|
| 49.21 | 23.08 |
| 48.74 | 47.53 |
| 12 | 40 |

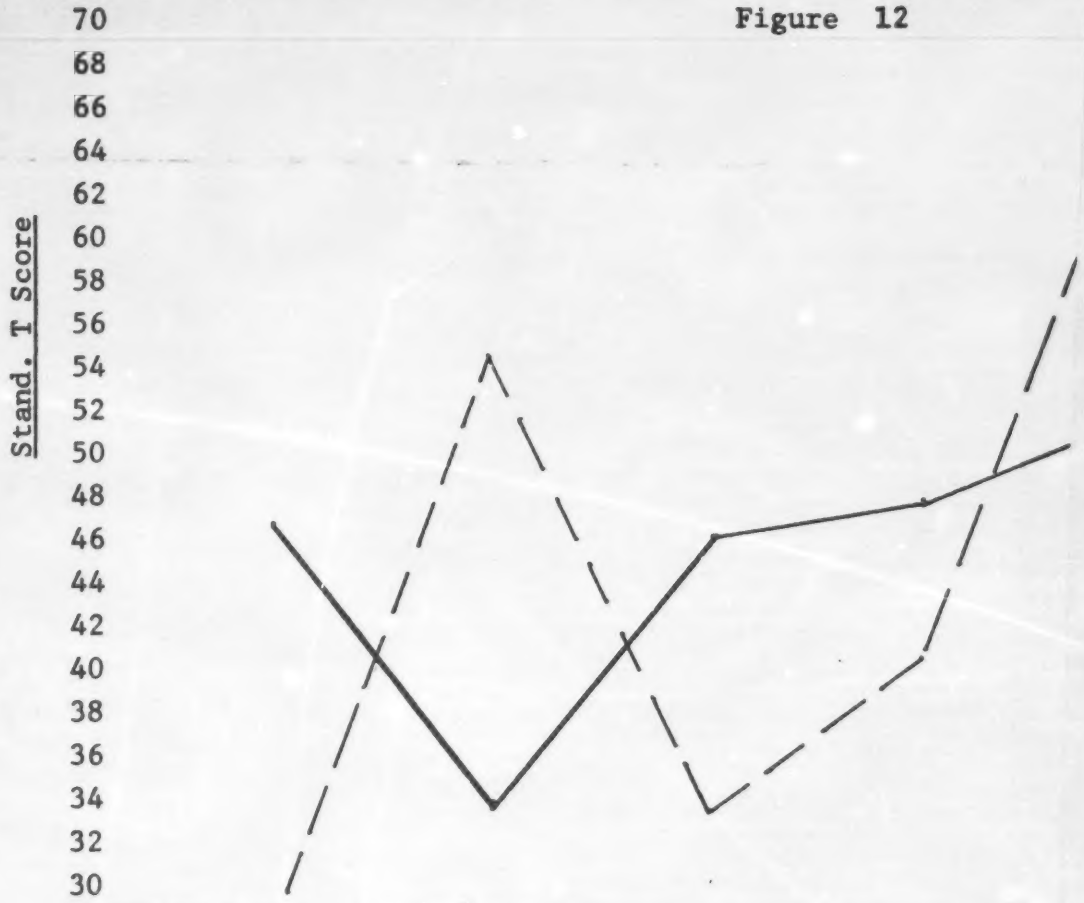
Grand Mean of All Groups = 50.00
S.D. = 10.00

s



.00

Figure 12




| Treat-ments | Trad. Curric. | Open Curric. | Behav. Curric. | DUSO Counsel. |
|---|---|---|---|---|
| ANCOVAS | 46.92 | 34.20 | 45.33 | 49.21 |
| Problems | 15.64 | 55.79 | 34.92 | 41.57 |
| N | 8 | 7 | 3 | 23 |

ANCOVA ———

Problems ------

**Effectiveness of Treatments**
For Group #6

| RBT Counsel. | Consult. Pocatello |
|---|---|
| 53.05 | 61.76 |
| 70.30 | 50.68 |
| 10 | 33 |

Grand Mean of All Groups = 50.00
S.D. = 10.00

Figure 13

Ratings of Treatments
As Applied to Groups and Suspected Problems

| | Effectiveness in Changing Scores | | | | | | Effectiveness in Reducing Overall Problems | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | BCCI Groups | | | | | | BCCI Groups * | | | | | |
| | 1 | 2 | 3 | 4 | 5 | 6 | 1 | 2 | 3 | 4 | 5 | 6 |
| Traditional | A | B | F | F | A | D | B | B | A | B | B | F |
| Open | A | B | D | F | C | F | F | C | F | C | F | B |
| Behavioral | C | B | C | C | D | D | B | C | A | C | C | F |
| RBT | F | D | B | D | C | C | B | D | A | D | C | A |
| DUSO | F | A | A | B | A | C | A | A | D | D | C | F |
| Consultation Pocatello | C | F | B | A | F | A | C | C | C | C | D | C |

Interpretation

A = Standard Score 60+ (86%ile +)

B = Standard Score 54-59 (67%ile to 82%ile)

C = Standard Score 48-53 (45%ile to 65%ile)

D = Standard Score 43-47 (25%ile to 40%ile)

F = Standard Score 42- (22 %ile -)

* Note that basis for comparison of Problems by BCCI groups is different and should not be compared with each other.

Effectiveness in
Reducing Specific Problems

| All BCCI Groups Together * | | | | | |
|---|---|---|---|---|---|
| Self | Gp. | Self Cont. | Verbal | Ener-gy | Cog. |
| C | F | A | B | F | C |
| B | C | F | A | B | B |
| F | F | B | F | C | C |
| B | C | C | C | D | A |
| C | C | B | C | C | F |
| C | D | C | D | C | C |



Comment

Very powerful in effecting change

Good in effecting change

Average in effecting change

Below average in effecting change

Poor in effecting change
and all BCCI groups on problems

## Footnotes

1 This is a summary of a much larger work (240 pp.) in which I document much more extensively the rationale and background of the study. Researchers may be far more interested in this original study than this summary. It is available from the author, and will be published later in book or monograph form.

2 For example, Eysenck and Rachman (1965) provide a diagrammatic analysis of the results of factor analytic studies matched to the older temperament categories (p.16). Eysenck indeed also reviews a variety of other efforts that appear to yield similar dimensions. More recently, Royce(1973) has provided an extensive review of factor analytic studies relative to personality and intelligence characteristics, tracing the evolution of primary, secondary and tertiary factors to an hypothesized origin of such characteristics. Moreover, Buss and Royce (1975) provide an intriguing set of hypotheses relative to the emergence of skills as a byproduct of environmental programming and subsequent differentiation.

3 The fact of hereditary components is not seriously questioned in psychological research, though Mischel (1968) indicated:(1) that there was comparatively little evidence for personality consistency and much strong evidence for the specificity of behavior;(2) traits and temperament characteristics are largely constructs of the observer (which incidentally validates their existence relative to the structural consistency of perception);

3 (continued)

and inferences from traits and states are not predictively useful. More recently Mischel appears to have moderated his position somewhat (1975) indicating that he does believe in the existence of three methods of assessment which may have some concurrent validation, i.e., self-report data, behavioral observations, and testing information. Moreover, Block (1975) provided considerable evidence relative to the consistency of personality over a long period of time that can be considered a partial rebuttal of Mischel's earlier position.

4

There is much evidence available to support the notion of progressive sieves in accounting for the variability of human behavior. The existence of an hereditary transmission, an interaction with a distinctive kind of supportive or non-supportive environment through nutrition and degrees of enrichment, and the variety of differences engendered in education and social reinforcement through parenting and education. Thus when a test of self-concept, for example, is administered to a group, such a test is effected by all of the above characteristics to some extent through an interaction. Moreover, temporary moods can also be involved in responses (Wylie, 1961, 1974).

5

I shall not attempt to trace or document the research done with the BCCI here. The manual,(Barclay, 1977) provides that information and the original paper on which this summary is based provides a tabular summary of 50 research studies completed with the BCCI (Barclay, 1978). One important observation, however, should

5 (continued)

be made here relative to the multi-trait, multi-source factor structure of the BCCI. In the vast majority of factor analytic studies that have been done, the overwhelming method is one related to self-report instrumentation. Thus, no direct access of environmental support is present in the factor analyses. With the BCCI, both teacher and peer support or lack of support is judged to be a valid environmental input to the factor structure. Thus, the factor scores of the individual in the BCCI do not really represent just his/her self-report, but a combined artifact that represents the individual in the environmental context.

6

My efforts over a twenty year period in the development of the BCCI system have been guided by a pragmatic concern. Teachers need to be able to identify children who <u>may</u> have developing problems. Prevention has been agreed to by all mental health professionals, but the developmental lag has been directly related to the lack of an appropriate technology. This in turn has been hampered by the identification process. With crises, there is no question of false positives, but prevention must be based on inferences of a trend. The suspected problem categories relate precisely to that effort.

7

Obviously, there is a wide scatter of cases throughout the two dimensions of the multiple-discriminant analysis plot, but for reasons of parsimony and pragmatism in terms of utilization, six broad groups have been identified. Regression procedures might well provide a better specificity of typology, but from the point of view of utilization, teachers and counselors cannot viably use a regression equation. Thus, grouping by six clusters appears to provide both a parsimonious grouping that in point of fact acts as a very sophisticated matching procedure. Thus children who are identified as being in group #1 in study A are very like those identified in group #1 in study B.

8

One real limitation with these data analyses is related to the cell sizes. Unfortunately, these were the cell sizes available, and makes the interpretation of the three-way interactions quite tenuous where only several cases are involved of a given sex.

9

I am not discussing these similarities here, but do discuss similarities in locus of control and other achievement dimensions in the larger study.

10

The publication of Bennett's book Teaching Styles and Pupil Progress occurred in the spring of 1976 when I was on sabbatical in England. The findings of Bennett so intrigued me because I was then analyzing some of these data,that I wrote to Bennett. He invited me to Lancaster where we spent part of a day discussing his project and some of my own research with this study. When

I arrived in Bennett's conference room I was surprised to see a Manual of the BCCI together with earlier research studies sitting prominently on a table. He said:" You see I was also interested in talking to you." In the course of the conversation he indicated that he had been most interested in the earlier progress of the BCCI, but did not feel it could be utilized in England at that point. Parenthetically, it should be noted that the temperament groups had not been devised or described in the manual that he had . What apparently occurred was that Bennett devised his own system utilizing instruments at hand. What is more important is that his outcome results are similar to those reported here.

11

In addition to the Rand Report (Averch et al., 1972) in which a recommendation was made to cut educational funding since there were absolutely no generalizable outcomes from educational research, Snow (1974) in a review of reviews regarding designs for research on teaching has succinctly demonstrated the status of the situation. For he points out that in 33 studies reviewed concerning the comparative effectiveness of teacher-centered vs. learner-centered classroom comparisons 8 favor the former, 11 the latter and 13 show no significant differences. In the analysis of 393 studies that compare televised with live classroom teaching, 83 favor the former, 55 the latter and 255 showed no significant differences. Of 88 studies comparing lecture vs. discussion methods in college teaching 45 favor the former and 43 the latter.